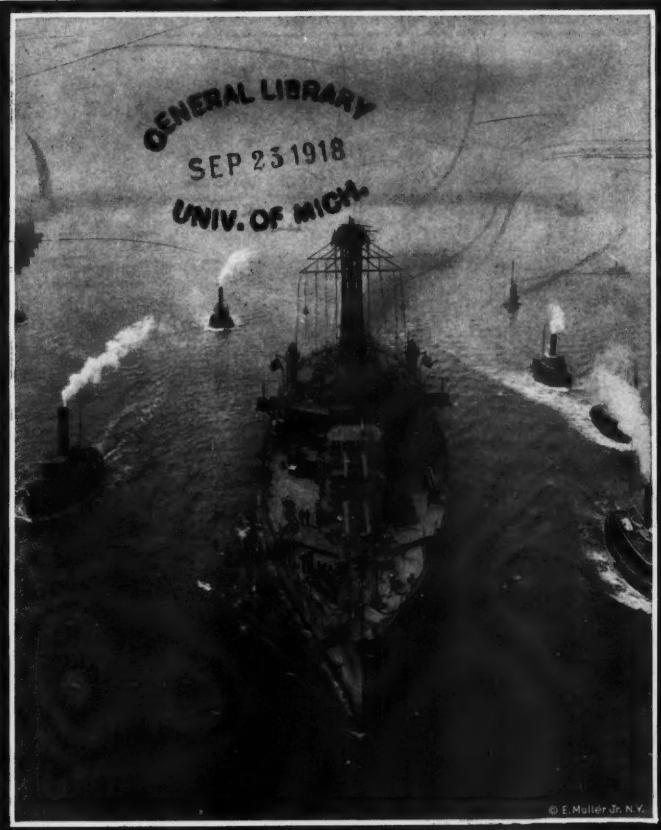


THE DENTAL DIGEST



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SEPTEMBER 1918

VOL. XXIV, NO. 9

EDITED BY

GEORGE WOOD CLAPP, D.D.S.

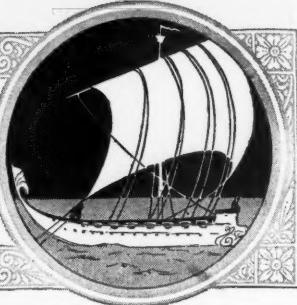
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220 WEST 42ND ST. NEW YORK

Phoenician Dentistry



HEN the Twentieth Century explorer turns up the skull of an ancient Phoenician and finds the evidence of prehistoric dentistry, *that evidence consists in gold.*

Any other material that may have been used is blotted out along with the history of the period.

The gold remains.

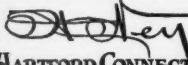
The workmanship may not have been in accordance with the principles of modern dental science, but these ancient operators worked for permanency.

The gold they used was not debased, impoverished; it was *honest gold.*

Four or five thousand years later, the dentist's chief reliance is still on gold. And no brand is more dependable for intrinsic worth and right working properties than NEY'S GOLD, "Best Since 1812."

If our products are not promptly and cheerfully supplied by your dealer write to us.



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NEW GOLD
FOR
OLD GOLD
SILVER
PLATINUM
ETC.

THE DENTAL DIGEST

Vol. XXIV

SEPTEMBER, 1918

No. 9

CONSERVATION OF PLATINUM IN DENTISTRY*

THE CONSTITUTION, PHYSICAL PROPERTIES AND PRACTICAL APPLICATION OF GOLD ALLOYS
REPLACING PLATINUM AND IRIDIUM FOR DENTAL PURPOSES, WITH THE OBJECT OF
CONSERVING PLATINUM METALS FOR THE BENEFIT OF THE GOVERNMENT

BY LOUIS J. WEINSTEIN, NEW YORK, N. Y.

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(Continued from August)

GOLD ALLOYS FOR ORTHODONTIA

During the latter part of 1917 the author of this contribution presented a paper on the metallurgy of gold alloys at the annual meeting of the Eastern Association of Graduates of the Angle School of Orthodontia.

Although possessing but a meager knowledge of orthodontia procedure, he presented the paper mentioned in the hope that some of the alloys he had developed for prosthodontia might prove of some value in orthodontia.

The Association became so interested in the subject that a metallurgical research committee was appointed to coöperate with the author in an investigation of metals and alloys with the object of securing improved materials for orthodontic purposes.

The principal object of the research committee and the author at that time was to develop a spring wire of better quality than available and a band material to replace 10% iridio-platinum which was then becoming extremely expensive. Neither the committee nor the author had any other reasons for the conservation of platinum in mind at the time, having no knowledge of the Government's needs for this most important war essential. The work thus undertaken fortunately proved successful, not only in developing the alloys desired, but also in conserving platinum to a very material extent.

A number of the alloys already in the author's series for prosthodontia

*Copyright, 1918, by Louis J. Weinstein.

were tested by the research committee, and other formulae were developed and submitted for preliminary tests.

The alloys described in the following were finally selected and the members of the committee after testing them in their respective practices for a considerable period of time, submitted an eminently favorable report at the 1918 meeting of the Association, in which they stated that the alloys tested were *far superior to anything available heretofore*, and unanimously recommended them to the consideration of all orthodontists.

The research committee, in addition to approving the formulae and general properties of the alloys, made recommendations for a standardization of the various necessary gauges and other dimensions and forms in which these alloys should be manufactured in order to be best utilized in orthodontic procedure.

It might also be well to state at this time that the alloys are entirely free from liability to disintegration or discoloration in the mouth, as they contain in no instance less than 65% gold or more than 7% copper, in addition to platinum, palladium, etc. Their uses in prosthodontia have already been described in the previous articles of this series.

FORMULA OF NO. 2 BAND MATERIAL

	PER CENT
Gold	84.5
Platinum	8.5
Palladium	2.0
Silver	0.5
Copper	4.5
 Total	 100.0
Melting point, 1975 degs. F., 1080 degs. C.	

This alloy approximates in hardness platinum (2-3% Ir.), and nickel silver, and is considerably harder and tougher than band material containing 90% gold and 10% platinum. Its fusing point is higher than that of pure gold and bands as thin as .003 inch may be soldered safely with 18, 20 or 22 K solder. It is even safe to solder with coin gold.

The following is a quotation from the report of the research committee: "*No. 2 Band Material is soft and pliable and is easily adapted to the tooth surfaces in the mouth and it also possesses the quality of somewhat retempering by heating and air cooling. It is an admirable material to use on teeth*

that have been moved and are somewhat loose, if the band is to furnish an attachment for a ligature, or for bands for tooth protection only."

FORMULA OF NO. 3 BAND MATERIAL

	PER CENT
Gold	66.0
Platinum	16.5
Palladium	9.0
Silver	5.5
Copper	3.0
<hr/>	
Total	100.0

Melting point, 2200 degs. F., 1204 degs. C.

This alloy is similar in hardness to 10-12% iridio-platinum. It also approximates the comparatively soft clasp metal* used to a considerable extent as a banding material. The melting point is over 250° F. above pure gold, and bands as thin as .0025 inch may be soldered safely with pure gold, coin gold, or other alloys not above pure gold in melting point.

The advantage it possesses over 10% iridio-platinum lies in the fact that it is much less expensive (approximately one-third) and is more easily adaptable in the process of fitting bands to teeth, although the bands when completed and retempered are more rigid and less liable to stretch and loosen than those made of iridio-platinum.

Its advantage over clasp metal lies principally in the fact that it possesses a much higher melting point (about 350° F. higher) and retains its integrity while red hot, not yielding in the soldering process.

The following is a quotation from the report of the research committee: "No. 3 Band Material comes nearest to 10% iridio-platinum of any material ever tried by your committee. It of course can be melted in the blow-pipe flame but it can be easily soldered with pure gold but when so soldering, it is very difficult to unsolder such a seam. If soldered with 22k. solder it can be readily unsoldered. It possesses greater edge strength than iridio-platinum and also the valuable quality of retempering to quite a marked degree after the band is made and attachment soldered to it, by heating and air cooling. This material we believe will be the universal band material adopted by all men skilled in making and fitting of bands for orthodontic purposes. We feel that the profession should be exceedingly thankful that such a material is obtainable at this time when iridio-platinum is practically impossible to get."

*Type 3, see p. 466. DENTAL DIGEST, Aug. 1918.

FORMULA OF "E" SPRING WIRE

	PER CENT
Gold	67.0
Silver	4.5
Copper	8.5
Platinum	12.0
Palladium	7.0
Zinc	1.0
Total	<u>100.0</u>

Melting point, 1960 degs. F., 1070 degs. C.

This alloy replaces most adequately the so-called spring or clasp wire ordinarily employed for labial arches, springs, pins, pin and tube appliances, light lingual arches, etc. The advantage it possesses over the spring gold wire almost universally employed, is in the fact that it will withstand considerably more heat than any other, the melting point being 200° F. higher. It may be safely soldered with the highest fusing gold solders without deterioration; it is more uniform and constant in its behavior and less brittle, therefore capable of withstanding considerably more bending and manipulation.

The following is a quotation from the report of the research committee: "*The 'E' wire possesses the greatest range of softening by annealing and retempering by heating uniformly to a cherry red heat and cooling in the air, of any spring gold wire tried. It is also more springy and therefore can be used in lighter gauges than any previously used spring gold wire.*"

FORMULA OF "ELASTIC" WIRE

	PER CENT
Gold	66.5
Silver	1.5
Copper	6.5
Platinum	16.5
Palladium	9.0
Total	<u>100.0</u>

Melting point, 2100 degs. F., 1150 degs. C.

This alloy has been employed for a number of years for various dental purposes, including orthodontia. In the form of wire it has replaced iridio-platinum for many purposes. It is somewhat softer than "E," and more especially suited for use in lingual arches, etc., where it is to be "pinched" or in other conditions where it is to withstand considerable manipulation.

The following is a quotation from the report of the research committee: "*Elastic wire has been used by most of the committee for at least two years to replace iridio-platinum (15-20% Ir.) for orthodontia purposes. It does not soften and lose its elasticity by annealing to the same degree as 'E' wire, and will not retemper to the same extent; but it should be retempered after bending and soldering by heating and air cooling, as this renders the arch far more uniform than if left untempered.*"

The melting point of "Elastic" wire is about 150° F. higher than "E" or 350° F. higher than ordinary "spring" wire; it may therefore be soldered safely with the highest solders or gold alloys equal to or below the melting point of pure gold.

This alloy may also be employed advantageously as banding material. It is, however, so difficult to stretch and contour that bands, in order to be made accurately, must be shaped on fusible or other metal dies.

FORMULA OF GOLD "B" FOR TUBES

	PER CENT
Gold	80.0
Platinum	9.5
Palladium	2.5
Silver	1.0
Copper	7.0
Total	100.0

Melting point, 1900 degs. F., 1035 degs. C.

This alloy when retempered by heating and air cooling is equivalent in hardness to 10% iridio-platinum. Its melting point is slightly below that of pure gold, and it may be soldered safely with 18, 20, or 22 K solder.

The author originally submitted alloy No. 3 as suitable for the various forms of tubes required in orthodontic procedure. The research committee in their original report approved this formula, but in view of the imperative necessity for conserving platinum, experiments were made with formula "B" to replace formula No. 3 and the results have proven very satisfactory.

Tubes made from this alloy have served admirably for a period of several months. As the walls are quite heavy and the soldering is done at normal temperatures, there is really no reason for using a higher fusing alloy, with necessarily a greater platinum content.

Substitutes for Platinum in Ceramics

In the beginning of this series of articles (May number) the author maintained that a great deal of the platinum used in dentistry could be

replaced most efficiently and satisfactorily by alloys consisting of gold, platinum, palladium, etc., thereby not only conserving platinum, but making possible as well, the utilization of materials more suitable than platinum or iridio-platinum for many procedures in prosthodontia and orthodontia.

In reference to platinum used in connection with porcelain jacket crowns, inlays, continuous gum dentures, etc., he said as follows:

"Quite recently a number of so-called platinum substitutes have been placed on the market, made from both secret and patented formulae. It is unfortunate that none of these alloys have so far proven efficient substitutes for platinum and iridio-platinum, in spite of the claims made for them. Not one of these alloys has so far been able to replace platinum foil for porcelain jacket crowns, inlays, etc., or platinum sheet required for continuous gum plates. Fortunately, the foil used in porcelain work is almost entirely conserved, as it can be readily reworked and used over and over again, and the continuous gum plates made so few in number as to require, comparatively speaking, but a trivial amount of platinum."

"It is hoped that further experimentation will not cease, but go on with more successful results in order to provide substitutes for platinum in connection with porcelain, thereby still further conserving the supply."

Since that time the platinum situation has become much more critical, the Government's needs increasing far beyond all expectations. Legislation has been enacted governing the possession, use, and traffic in platinum, rules and regulations restricting the use of platinum in dentistry are about to be issued by the authorities and may be expected daily.

In anticipation of this state of affairs and the possibility of platinum being withdrawn from dentistry entirely, the author has formulated several gold-palladium alloys which have proven very satisfactory substitutes for platinum required in connection with ceramic procedures at temperatures up to 2600° F.

Alloys of a similar type were made by him several years ago but abandoned at the time because they offered no special advantages over platinum which was then comparatively cheap and readily obtainable. The data obtained, however, has proven most valuable in this present emergency.

The alloys recently completed have been thoroughly tested in practical work and seem to offer great possibilities in other fields as well as the dental. The United States Bureau of Standards and Columbia University are coöperating in making the final tests, and a complete report may be expected in the October article which will conclude this series.

(To be concluded in the October Number)

A METHOD OF MAKING SWAGED CROWNS

BY RUBEN CASTRO, D.D.S., SAN JOSÉ DE COSTA RICA

This method of making swaged gold crowns is uniformly successful for either two piece crowns or for seamless crowns.

Prepare the root and take measurement. Make a copper band of 30-gauge material and fit to root, making proper adaptation at the gingival margin, and giving the band the contour desired. Trim to



Shows copper band and compound cusp and plug in split plaster mould.

proper length and insert a small ball of softened modelling compound and have patient close in normal occlusion. Remove band and compound when cool and carve cusps. Return to mouth for trial and make any necessary change in cusps to accommodate the bite when in lateral occlusion.

When band and compound are shaped exactly as finished crown should be, remove from the mouth and carefully insert a plug of modelling compound into the gingival opening of band, being careful not to allow the compound to overlap the gingival margin of the band, as that would prevent the proper festoon of the gum line from being reproduced.

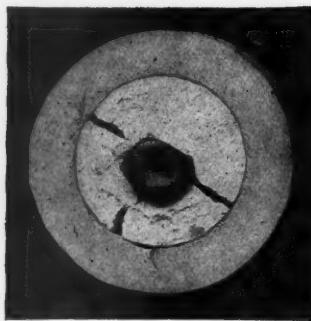


Band replaced in plaster mould preparatory to pouring metal.

With cusps and compound plug in position, mix a small quantity of plaster of paris and invest the crown model in a rubber ring, as shown in accompanying illustrations.

When plaster has thoroughly set, remove from ring and with small saw make two vertical incisions on opposite sides of the investment through the bucco-lingual diameter of the crown model, and separate the investment for the removal of the model. In the case of some crowns it may be necessary to break the investment in three pieces.

Remove the modelling compound cusps and the compound plug and carefully slit the copper band with a small pair of straight shears so as not



Split plaster mould assembled in rubber ring, and metal poured.

to change its shape and replace in the investment. This cutting of the band is to facilitate its removal later. Having replaced the assembled investment in the rubber ring, pour fusible metal into the mould and cool.

Remove metal model from investment and take copper band off of the metal. This gives you a model with the same measurement as the root, or the inside measurement of the band and insures a correctly fitting crown.

With a file, smooth off any lines which may appear at the point of union of the band and occlusal portion and your model is ready.

If a seamless crown is desired, select a 30-gauge gold crown blank of proper size, anneal and fit it over the model, and drive cusps into soft pine block or lead counter-die. Reanneal and drive into pine block until gold is perfectly adapted to metal crown form. If preferred, a short swaging ring may be used in the usual way. To remove gold crown from fusible metal form, place in small pan of water and boil until the fusible metal melts and runs out of gold shell. In driving shell into pine



Showing metal model in split plaster mould before removal of copper band.

block the gold will sometimes stretch and extend above the gingival. This can be easily trimmed when fitted to the root in the mouth.

In making a two-piece crown in the laboratory, the metal form gives the assistant a definite measurement, the correct cusp form and the gingival outline, and this results in a more complete crown for the operator to adjust in the mouth.



Metal model after removal of copper band; trimmed and ready for gold.

While this method is especially valuable for seamless crowns, the writer prefers the two piece gold crown, as it permits of greater freedom of manipulation in his hands.

*The Great "Liberty Loan"
Begins This Month!*

A MALIGNANT, DEADLY MALADY LURKING IN THE MOUTH

BY DR. G. ALDEN MILLS, NEW YORK, N. Y.

[This article was read before the Society of American Dentists of London, Eng., April, 1913. Dr. Mills, the author, has passed his 87th milestone and is still well and vigorous. He has survived nearly all of the group of brilliant men in New York, who were making dental history, forty or fifty years ago.

Dr. Mills has seen so many theories come and go, that he is sometimes inclined to ask for strong proof, but his article shows that he is not yet beyond theorizing a little himself.—EDITOR.]

A devotion to our calling inspires our purpose to put on record some opinions which we believe are sustained by reasonable proof, opinions showing that dentistry is or has "come into its own." Sixty years of unabated interest has ripened a conviction that we need not feel modest in emphasizing the status that rightfully and intelligently belongs to us. Someone has truthfully said that the last seventy years' history of dentistry has earned a commendable notice of recorded facts, notwithstanding that one Dr. Hunter, of London, has heralded to the world through a public address that "American Dentistry was a disgrace to our present civilization." It is not our purpose to try and refute the statement, but to direct intelligent attention to a subject that has not yet become fully understood.

Dr. Flexner has announced his opposition to the belief of the noted English specialist, the late Sir McKenzie, regarding the diagnosis of the late German Emperor's case being one of cancer. ("Who shall decide when doctors disagree?") Well it allows us to assert that dentistry has a record in history that will, or should, bring about an agreement that will show both plausibility and reason. It is our purpose to show that dentistry can claim not only the man but certain intelligent observations which have brought to light the discovery and treatment of a troublesome disorder, and enable us to arrive at some conclusions regarding the difference of opinions of medical surgeons. Without hesitation we bring forward the record of our eminent practitioner, the late Dr. John M. Riggs of Hartford, Conn. To him the world owes a debt of gratitude and remembrance because of the moral courage in performing the first surgical operation under anesthesia, in association with the late Dr. Wells the acknowledged discoverer of anesthesia. We are stating facts that carry with them reverence that is due to so memorable an act and which prevailing knowledge had not yet known to be true. No one had known but what complete anesthesia would end mortal existence.

Dr. Riggs accepted the inspiration in good faith and went forward to meet Dr. Wells' ejaculation "Excelsior," following the removal of an organ of a physical body, thus ushering in a new era in physical and surgical science.

We remember with more than usual thankfulness that portion of the public press which took special interest in Dr. Riggs' discovery and the clinical treatment of Pyorrhœa, and gave it first to the public in detail. To the honor of the Springfield *Republican*, it gave the full report of this proceeding which occurred in Springfield during the early '70's, in connection with the Connecticut Valley Dental Association. The notice then given by the press proved a boom of no small importance, and dentistry, from that day, has continued to improve in scientific importance in a manner never before witnessed.

Dental workers from that date have been steadily reaching forward to learn the etiology of this insidious disorder, but after all these years no conclusion has been arrived at which enables us to say that we fully master the disease.

We do know the conditions that are found in typical cases, and that nothing short of mechanical surgery can arrest the progress of the disease, and nothing seems able to cope with this malady but surgical ability. Many practitioners do claim to possess a cure, but we take a decided stand against them. We challenge denial, when we declare that no human hand or mind can cure "predisposed" cases. This lies in the hands of "First Causes." Our most distinguished dentist, Dr. J. Leon Williams, formerly of London (but an American), classes this disorder under two heads, viz: "Predisposition and Environment."

We can no longer overlook the fact that the public is asking how they may know the characteristics of this disorder. To the public we now direct our first proposition. How are we going to reconcile the differences of these eminent surgeons? For they are such. They have not been brought in contact with what the dentist has, nor have they been informed of his professional experiences. What are the symptoms of this disorder? They are various, yet in the main they are general. Expert practice and observations are the sources of our knowledge. We are able to give direct attention to main manifestations. First, a decided redness and looseness of the gum tissue at the necks of the teeth, this is a minor symptom. Secondly, and a more important symptom, the dropping away, on one or more of the two sides of some of the teeth, causing, ultimately, a pocket, and this by simple pressure will show the exudation of pus. This shows conclusively that there is a decided inflammatory condition calling for surgical attention, and if neglected will involve an utter destruction of the bony structures that hold the teeth in their

natural places. Thousands and tens of thousands of useful teeth have been lost by this disorder, before Dr. Riggs' discovery and treatment. It is the largest subject of interest to-day in dental science, literature and practice. Many a life has been cut short, and many more have had prolonged languor and suffering, not knowing how to account for the cause. In both the cases of the late German Emperor, and the late General Grant, we are bold to declare that they had this disorder in an aggravated form that brought about what all medical men know, viz.: "That the increase of a minor disorder often brings into existence a malignant condition." On this theory we base our conclusions, that these cases had by the presence of this disorder, a condition we term malignant blood poison. Correspondence with the late Dr. Miller of Berlin, the most noted dental bacteriologist of his time, proved that the Emperor had this destructive disorder in his mouth, and that there was a known inheritance in the long line of his family that would favor a tendency to rapid maturity. Dr. G. Lenox Curtis, an eminent oral surgeon, declared that he has full proof, microscopically, that this disorder has its origin in syphilitic taint. Learning what we did from Dr. Miller, we wrote the eminent English specialist, McKenzie, and gave the facts obtained regarding the Emperor, and also gave him our own conviction, in an article that we had published in the New York *Medical Journal* (the late Frank Foster, Editor), the title being "Riggs' Disease." This article was indirectly solicited by Dr. Foster through the recommendation of the late Dr. B. St. John Roosa, and also by the late Dr. Frank Hamilton. We received an appreciative answer to our letter and article by the London specialist, he saying that "his mouth was closed." In connection with the history of this article of ours, we first wrote an article giving our belief concerning the case of General Grant, which was at that time in the hands of the doctors. We first had this read by both Drs. Hamilton and Roosa, and they said it should be published, and Dr. Roosa gave us a note of introduction to Dr. Foster. Dr. Foster read it and gave us proof of his interest in the article, but felt a little sensitive about publishing it for fear it might cause unpleasant controversy. On his suggestion we wrote an article on Riggs' Disease and he published it. This can be found in the file of the *Journal*, we think it July, '85. Concerning General Grant, we can speak more definitely. We were consulted by a Washington dentist during Grant's presidency, regarding this case, and it was shown that every tooth was surrounded by active suppuration. We suggested immediate treatment. It was said "he was too much of a political patient to handle." We believe that had this case been attended to as it could have been, the malignant blood poisoning would never have developed. We, too, with the London specialist believe

conscientiously that neither of these public men had a cancer. This condition of the general's was noticed by us some four or five years before these later developments. A vital mistake, in our belief, occurred by the removing of several teeth during the first manifestations of the malignant condition. This could but have inoculated the entire territory to greater depths.

We could enumerate many cases of this disorder that have produced distressing conditions, such as extreme facial neuralgia and paralysis, blindness, deafness, and pulmonary conditions, and general debility resulting in death. Up to the date of Dr. Riggs' presentation this disordered state was noticed more after the middle stage of life and in the advanced conditions in old age, leading to the thought that it was a disease occurring from senile conditions, and not amenable to remedial treatment.

In the early part of this article we used the term "typical cases." Many cases of unhealthy conditions are mistakenly thought to be typical, while they are but cases of neglect or filth.

Some of the most advanced cases are among those that are scrupulous in the personal care of their teeth. There has arisen not a little controversy regarding the origin of the disorder, whether it was wholly constitutional or allied to local conditions. Some deny that it is in any sense constitutional, but such testimony has no weight with real knowledge, for the latter could not occur without the former. While many may not know the fact that there is no such thing as absolute health in a physical body; all fall short in some part of the organic body, one organ often being more normal than another.

We cannot close this article without recognizing the important results that have followed the introduction of Dr. Riggs' teachings. It has led to more scrupulous attention of the cleanly condition of the teeth by the dentist, and there has been introduced a systematic cleaning of the teeth in a greater degree of health though there be a constitutional tendency for disease to manifest itself. This tends to prolong a better condition of the teeth for mastication and immunity from decay, making the dental care of the teeth less expensive. This is in the interest of economy and to the credit of dental ability.

The vexed question of the cause of decay of teeth, is not the least feature of the controversy.

We believe that ultimately it will be proved that the cause is couched in Predisposition, that is, internal, and not external.

In our time and age this problem may not be solved, but there is promised a millennial age when the first cause of all disorders will become

known, and physical conditions will be restored to their first estate.
Happy future that!

226 Central Park West.

HOW SCIENCE SIZES YOU UP

How much is a man worth from a scientific viewpoint?

According to one way of looking at it a man is worth about \$2.50 a day from his shoulders down and anywhere from \$50,000 to \$1,000,000 a year from his shoulders up. This may be said to be the estimate of the average successful business man.

The scientist, however, looks at the question from another angle, says *Popular Science Monthly*. According to him a man is worth \$2.45 for illuminating purposes, since a man weighing 150 pounds contains about 3,500 cubic feet of oxygen, hydrogen, and nitrogen in his constitution, which at seventy cents per 1,000 cubic feet equals the price above. Also a man contains enough carbon to make 9,360 lead pencils; enough phosphorus to make 800,000 matches or enough to kill 500 persons, and enough water to fill a thirty-eight quart reservoir.

Furthermore, it makes no difference how sour a man may look, he contains about sixty lumps of sugar, a great deal of starch, chloride of potash, magnesium, sulphur, and hydrochloric acid in his system. There are fifty grains of iron in the blood of an ordinary man, enough to make one spike large enough to hold his weight.

What is a man? This is the somewhat cynical answer of one scientific man:

"Break the shells of 1,000 eggs into a huge pan or basin and you have ingredients from which to form him from his toe nails to the most delicate tissues of his brain."



DENTAL LAWS

Revised to July 30, 1918

THE OUTLOOK

BY ALPHONSO IRWIN, D.D.S., CAMDEN, N. J.

Army and Navy: June *Army and Navy Register* reports that Dental Examinations for the Army have been closed for six months; over 5,000 dental commissions have been accepted; 5,810 dentists are in the Army Dental Corps. Doubtless a call for more dentists will be made when the new "enlarged military plan" goes into effect. Before this article is printed unforeseen changes and events may create new demands upon the dental profession; or, former arrangements may be cancelled. No one can foretell with any degree of certainty sixty days before publication.

Otherwise, the United States Army and Navy afford openings for qualified dentists within specified limitations. For the American Army Dental Corps, address Surgeon-General, United States Army, War Department, Washington, D. C. For the Navy Dental Corps entrance requirements, address via Surgeon-General, United States Navy.

The States: Before the war, few desirable openings existed in the United States and Canada, and heretofore they were promptly filled by those dentists in closest touch with local conditions; but look out for a change! Chances will soon become more plentiful; gaps will occur in the ranks of qualified registered dentists that must be filled on short notice, owing to vacancies created by men going to the front on the continent of Europe.

Europe: Europe offers unprecedented opportunities to the Oral Surgeon willing to sacrifice self-interest. Write to Surgeon-General in Charge, Hospital Units in France. Address these Units as formed from time to time in the United States, preparatory to departure for France, for full particulars. If you are desirous of practising oral surgery at the front, preliminary training and experience are essential in head operations and facial restorations. Consult the issues of the *Army and Navy Register*, the *National Dental Association Journal*, and the *DENTAL DIGEST*, for announcements. The best plan of all is to correspond with Oral Surgeons at work on the front, if possible.

Central America: Latest advices indicate that the American dentist who locates in Mexico and those countries of Central America where insurrections are liable to occur, such as Guatemala and Costa Rica, for instance, does so at the risk of life, limb, liberty, and possessions. Outside of these countries, there are some tempting opportunities to any one who can stand the climate, face the conditions, and speak the language.

South America: Attention is directed to South America, as this continent appears to offer about the best foreign openings at the present time to the enterprising dentist. Argentina, Brazil, and Chili are mentioned as desirable fields; American dentists are scarce there and their work is reputed to be much superior to that of the native dentists. Fees are high, so are expenses. Speaking familiarity with the Spanish, Portuguese, or French language is absolutely essential to success; so is quick adaptation to racial questions, social conditions and alien environments, while acclimation is of foremost consideration; some constitutions cannot stand the climate and it is useless for such persons to make the venture. It would also be useless to locate in South America without ample funds, the necessary equipment, and professional ability of the highest grade. The dentist who seeks a foreign location for the practice of dentistry must be a cosmopolite in the complete sense of that word, and a "good mixer."

Asia: Asia presents little temptation for settlement, to the dentist. In China, except in the European quarters in the largest cities, no openings occur, and in these sections, when they do occur, they are soon filled, usually by some friend who is "tipped off" by some one on the spot. In other parts of China, Japanese dentists often do the dental work, and they must live on fees that are ludicrously small.

The continent of Asia, with its hundreds of millions of population, is so vast, the needs are so great, and the civilizations so varied, that it is only possible to speak in the most general terms. American dentists have prospered in India, and in some of the capitals and large cities of the East, but it is obvious that unusual avenues for acquiring information, special influences at work, and remarkable opportunities must present themselves to induce an American dentist to locate, while the dentist himself must possess qualifications which fall to the lot of few men. We have known instances where American dentists have located in the East, and even to amass fortunes, but they are very rare. During a personal visit to Turkey, Syria, Palestine and adjacent lands some time ago, we found the outlook for the dentist lacked inspiration.

Africa: The outlook for dentists in Africa is not promising. In Northern Africa, in such countries as Algeria, Tunis, Morocco, and Egypt, isolated openings occur, occasionally, and are desirable where there is a large contingent of Europeans or other civilized citizens. The same may be said of countries located in Central Africa. Up to this time such vacancies have been promptly filled as fast as they presented themselves. Our personal observation has been that Algeria and Egypt were more desirable countries for a dentist than any other part of Northern Africa.

In other portions of Africa, such as Liberia, dentists are needed, but few white men would care to depend on such mixed, not to say uncivilized, beings. Any one aspiring to be a dental missionary would find ample opportunity to exercise his talents in these regions. The more civilized States in South Africa offer glittering possibilities to the dentist.

Australia: The Islands of the Seas have a certain fascination for some dentists, especially if they have a roving disposition. Otherwise, no dentist should risk a venture in Japan, Australia, New Zealand, Tasmania, Madagascar, Mozambique, Greenland, Iceland, or other islands, unless he is sure of his opportunity. These lands are well occupied by local dentists familiar with the needs, the habits, and the climate, language and conditions prevailing among them.

United States, Laws: In the United States, the new laws passed are the leading features. They may be secured by writing to the Secretary of the Board of Dental Examiners as named in the DENTAL DIGEST. The publication of the State Dental Laws in full would fill many thousand pages, and some of them would be changed before the printer's ink became dry, in the present condition of legislative unrest. The dental requirements in detail may be secured by addressing the authorities named in the DENTAL DIGEST.

Laws Abroad: There has been greater stability in dental legislation abroad than in the United States. Few changes have occurred, even in those countries not actually engaged in war, and they are of minor importance. The European conflict prevents the publication of a revised version of Dental License requirements, throughout the world. With the advent of peace we must look for sweeping changes, the prelude to a new era in dental legislation.

1918—*The United States—New Laws:* Dental legislation has been prolific, drastic, and erratic. Nearly all the State laws have been changed in the last decade.

Raised Standards: Non-graduates have been barred from the examinations, standards have been raised, severe prosecutions and penalties imposed for infractions of the law, and reciprocity enacted. New laws and amendments have been passed one year, only to be repealed or altered the next opportunity. Enforcement of dental laws is erratic, because illegal practice is rampant; advertisers, quacks, and dental parlors flourish in greater numbers than ever. The advanced standards are drastic, because we are living in a *martial* age, hence it is impossible to comply with their demands; moreover, similar restrictions were tried about twenty years ago, under much more favorable auspices, were found impracticable, and were abandoned for more feasible methods. Men *specially trained for that purpose only* are *competent to draft equitable laws governing professions.* That is the reason the New York Dental Law is the most *comprehensive, equitable and practicable* dental law produced so far in the United States; Illinois is getting *there* fast; while Indiana, Massachusetts, Pennsylvania, Ohio, California, and several other states are progressing rapidly in the right direction. *The fact that dental laws are being changed so often is abundant proof of defects.*

The truth is that the Dental Laws of the United States are in all stages of legislative evolution, from the lowest to the highest degree, and that each State is striving after legislative perfection, honestly and sincerely, with a laudable ambition to protect the commonwealths and safeguard the legitimate interests of the dental profession; hence we must anticipate new dental legislation every year, in this country, and coöperate in the endeavor to secure the ideal dental laws.

Dental Examiners: Nearly all the Boards of Dental Examiners have been changed. The officers as well as the personnel have been changed; scarcely a dozen of the original Secretaries remain in office. In one State, this officer has been changed four times in one year; in others four times in four years; and in several States it has been a game of battledore and shuttlecock between the President and Secretary in performing the duties of the latter office.

Reciprocity: About twenty State Boards actually actively interchange licenses; about thirty-five dental laws provide for reciprocity in some form or other. It must be remembered that some reciprocity agreements are evanescent and elusive; no one can fathom them, no one can keep track of them, they are like chasing a phantom. Nevertheless, few State dental laws fail to provide for the interchange of licenses. It must be borne in mind that the examiners have the right to cancel agreements at their discretion, and they do this promptly as soon as they

find that this privilege is abused. Reciprocity between the United States and foreign countries does not exist, as applied to the granting of dental licenses.

Non-graduates: In the United States another phase of dental legislation deserves attention. The more populous States with decided urban propensities are adopting Acts through their respective legislatures, establishing examinations and licenses for the Dental Hygienist, for the benefit largely of City practitioners. This is a most laudable provision of our enterprising legislators, yet all States fail to provide an examination and license for the proficient mechanical dentist without a dental degree. There are thousands of these laboratory men in this country, and many of them possess rare skill as artisans. Furthermore, almost all licensed, registered, ethical dentists must employ one or more of these mechanical dentists at some period or other in their practice. They have been excluded from the regular examinations by the new dental laws, legislated out of business, in fact. Why not now provide by legal enactment an examination and license for the mechanical dentist who is successful in passing the required tests; call it a P. D. L. or Prosthetic Dentist License, good for laboratory work only. Why make the mechanical dentist non-graduate, the Ishmaelite of the dental profession? We all know that many of them are thoroughly reliable, capable, and of good moral character. What is still more to the point, *we cannot get along without the efficient dental mechanic.* We predict that ere long some one will discover that there has been a serious blunder made in our recent dental legislation in failing to provide a legal status for the qualified prosthetic dentist. We do not wish to assume the rôle of a critic, but do not such omissions savor of class legislation, or unwarranted discrimination? In providing for the Dental Hygienist and failing to provide for the mechanical dentist, have we not "strained at a gnat and swallowed a camel"?

One State famous for its university and maintenance of high educational standards has already examined eighty-seven (87) non-graduates since the new dental legislation went into operation. Does this not forecast a change of sentiment in this land?

We believe the outlook for competent non-graduates is more hopeful because there are already signs of a reaction from the ultra or exclusive legislative measures; but readjustment must proceed primarily from the dental profession, and the necessity created by the world war will prove the goad to action.



HABIT IN THE SELECTION OF TOOTH FORMS

BY GEORGE WOOD CLAPP, D.D.S., NEW YORK

It is easy to follow methods which have been made habitual by use. Because of that very ease, such methods exert a power over us and a backward pull upon our progress which are seldom appreciated and sufficiently guarded against. We occasionally arouse ourselves by deliberate effort and substitute scientific procedure in some part of our work where unscientific habit had ruled. But when the initial effort has passed the ease with which the mind slips into accustomed ways, tends to slow down our application before we have overcome the difficulties always present at the beginning, to say nothing of having mastered the better way. Unless we are constantly on guard to prevent it, we find ourselves doing very nearly the old thing in the old way. Eternal vigilance is the price of progress, not only in things political but in things professional.

The writer has been particularly struck with the influence of this Power of the Past upon dentists' minds in the selection of tooth forms for denture cases where every opportunity existed for the exercise of professional knowledge and for the attainment of fine results. It is not uncommon to select for some dentist the form of tooth suitable for a case, and for him and the patient to be enthusiastic about the results; and then to have him, at the very next opportunity, fall back into the habits of selection to which he is accustomed, even though the principles of correct selection had been explained to him and had been warmly approved in principle and results. The purpose of these articles is to present some now well accepted facts in an informal and conversational way, with the thought that they may thereby be made more understandable to some, and that all may be helped to be a little more on guard against the force of habit, when it comes to selecting teeth, or to justifying to the patient the form we have selected.

WHAT DETERMINED OUR HABITS

Our habits in the selection of artificial teeth have been determined by two important factors, the forms of the teeth from which we might select and our knowledge of an intelligent method in selection.

The forms of the teeth have been largely conventional for more years than most of us in practice can now remember. I do not know who carved all of them or when. I know that many years ago there were scattered about the world a number of true artists who carved in bone and ivory some very beautiful sets. I know also that the perception at the

beginning of the carving of the conventional forms was true enough, as far as it went. It saw that some teeth were generally square in outline and some generally tapering, but it never perceived the characteristics of the tapering type and did not recognize the ovoid type. That original perception must have occurred many years ago, and since then the forms appear to have grown more and more conventional and to have lost more and more of the fine characteristics which made them like natural teeth.

Naturally enough we saw in such teeth only what the man who carved them put there for us to see. He put only conventional things there and gave us no hint of the riches of beauty which he had successfully covered up. Therefore, perception of tooth form remained an unknown thing to most dentists and as an unimportant thing to many others. We couldn't have gotten better teeth even if we had known what we wanted, unless we re-made them ourselves, as a few artists did.

We were made careless and indifferent by the fact that we had no intelligent method of selecting such tooth forms as were furnished. When I began practice I was told that a person with small frame, light skin, blue eyes and fine hair required a certain type of tooth, and that one with large frame, coarse skin, dark hair and eyes required a slightly different form of tooth. I didn't know then why I never could make anything out of such directions or select according to them, but I know now and I'm going to set it down here for the benefit of any who are similarly troubled. It is because there is no relation between the color of the skin, eyes, hair, etc., and the form of the teeth. You cannot match color in one thing with form in another. You can match color with color or form with form, but never color with form. It is now known that people with very light hair, skin, eyes, etc., present all known forms and sizes of teeth, and that people with very dark hair, skin, eyes, etc., present identical tooth forms and sizes.

These, then, are the things which have determined our habits; imperfect tooth forms and an unscientific method of selecting even such as we had.

And these are the habits we formed. Most of us do not know what tooth forms are needed in prosthodontia or how to select them; we overlook the use Nature makes of the interdental spaces in defining tooth forms and we do not appreciate the value of proper coloring in laterals and cuspids.

Beginning next month I shall try to make plain what forms are needed, the principles of selection, the use of the interdental spaces about which many dentists are unduly frightened, and a few of Nature's achievements in effecting perspectives in teeth by variation in shade in the set. Much has been written on each of these subjects; but I am frequently told that

the writing is stilted and hard to understand and that if we could only chat together we should get on much faster. And so, writing in a purely informal way, I shall try to give you the results of some years of observation and experience in the hope that it may enable some of us to throw off the Power of the Past, at least in some of the details of our prosthodontic work.

THE NECKWEAR SHARPSHOOTER

He started fighting the Boche the day the recruiting officer turned him down. He's fighting yet with something the German supreme command can't outflank.

BY GUY HUBBART

The recruiting officer in a medium sized city turned a volunteer down because he was physically unfit to fight in the trenches. The young man was anxious to fight, he was anxious to get at the dirty boche and his swaggering officers first hand. But his chest was too shallow; his heart was weak; his feet were flat. He was rejected unconditionally. This is what he said when he got back behind the men's furnishing counter; his regular job:

"Oh, I am not fit to fight, hey! Well, I *will* fight. My feet may be flat, and my heart weak but my head isn't flat, my brain isn't weak. I'll fight the damned Kaiser and his crew of Potsdam butchers and baby killers. I'll fight him with something sharper than a sword, something the Teutonic philosophy cannot comprehend. I'll fight him with ideas."

The young man with the flat chest did fight. He organized a War Savings Stamp Club in his store and under his direction it sold \$36,000 worth of stamps in six weeks. His boss helped him, his customers helped him. He is selling stamps yet and selling his regular merchandise, collars, neckties and shirts.

But he hasn't allowed his regular job to interfere with his fighting. No, sir, not at all!

Do you know what that \$36,000 will do toward winning the war? Ask any Ordnance man. He'll tell you and then you'll know why the Kaiser fears ideas more than he does guns. He knows he can't fight ideas. He is at the head of an army of cattle. Cattle must be driven. They can't fight like this flat chested clerk.

You men who are meeting people with ideas. Are you helping them fight? You are if you are a War Savings Stamp Booster.



American Red Cross worker showing French children the importance of taking care of their teeth and how to keep them clean. More than 173,000 people attended this child welfare exhibition. The motto, "Clean Teeth Do Not Decay," is as applicable in our own "second line of defense" as just behind the front.



PREPAREDNESS LEAGUE OF AMERICAN DENTISTS

COMMUNICATION FROM THE PRESIDENT

FREE DENTAL SERVICE

There are a few points about free dental service that should be emphasized at this time.

1. The League requests its members to give each drafted man *one hour* of free dental service. This should be given without question as to ability to pay.

When the hour has been completed, the dentist is at liberty to inquire as to the ability of the registrant to pay a fee to have the work completed, should additional service be required. Should he prove himself worthy of further free service, the dentist continues such service in the *name of the league*.

Such service only, is reported to the League.

2. All dental work for which a fee is received from the drafted man *is not Preparedness League work.*

Such service must not be reported to the League.

FREE is a word that cannot be qualified and admits of no variation, the charge of a single farthing nullifies the spirit of the League through which free dental service is given.

We have a million of our boys in France. How many of them are suffering from dental ills because you and I did not give them free dental service? Thousands are suffering to-day because you and I did not do our full duty by them. It is a serious matter and let us resolve to throw our best efforts into this great work which we alone can do.

Let us fight the enemy with our own weapons—those with which we are most familiar. As dentists, each one of us can do more to help win the war with the excavator, the engine and the forceps than we could by shouldering a gun and taking a place in the first line trenches.

Each one of us can do this in his own office by giving free dental service to the drafted man. Give it freely and without restraint as one of

the great privileges of an American citizen and let us all be thankful that we are able to do this through the heritage of the greatest birthright given by any nation.

President Wilson has shown us our duty when he said: "An army can win a battle, but it takes a nation to win a war."

I command to the attention of every member of the League the following letter, which concisely covers the situation and may be considered a rule to follow. It is most essential that we conform in every particular to the ruling of the War Department:

WAR DEPARTMENT
OFFICE OF THE PROVOST MARSHAL GENERAL
WASHINGTON

June 8, 1918.

DR. J. W. BEACH,

President Preparedness League of American Dentists, Buffalo, N. Y.

DEAR SIR:

This is to acknowledge your favor of June 4th, and to say that, it together with enclosures, has been carefully noted. This office very much appreciates the incalculable value of the work your League is doing and the prompt and full coöperation of its officers with the Government.

In the course of the enormous work you are doing, misunderstandings have necessarily arisen between dentists and the registrants for whom they were voluntarily working, but such misunderstandings are by no means confined to the profession of dentistry. We realize that some who are able and ought to pay for dental services rendered will try to get service without payment. This, of course, is not contemplated by any fair-minded person, much less by the Government. Registrants who are able to pay for the necessary work ought to do so, and those demanding very expensive work, or more than is necessary to fit them for military service, ought at least to pay the expense.

In order, however, to avoid any misunderstandings, and to prevent any possibility of abuse or scandal, I think there should be no attempt whatever to differentiate between those who may and those who may not be able to pay, so far as concerns the actual work necessary to fit for military duty. I think the rule ought to be clearly and fully announced, that *any registrant who is sent to one of your members and presents himself for treatment comes as a result of a statement that the work is to be done without cost to him*, just as if he were already in the service and were being treated by Army Surgeons, and is to be given such treatment as may be necessary, without any thought or inquiry as to whether or not he is able to pay. If he voluntarily and without demand offers to pay what he can,

or if he requests additional treatment beyond what is absolutely essential, that is a matter of agreement between him and the dentist.

I hope I have made myself perfectly clear, and am sure that you agree with the proposition I have advanced.

I hope that you will convey to the members of the League the assurance that the value of the magnificent, patriotic work it has undertaken and is performing is fully appreciated not only by this office and by the War Department, but also by all our people to whom it is day by day becoming better known.

Very truly yours,
(Signed) J. S. EASBY-SMITH,

Lieut-Colonel, N. A.,
Chief, Law Division.

The Treasurer has from time to time received requests from League workers in various parts of the country, for from fifty to five hundred buttons to be sent for distribution at State or Local Meetings. Because of action taken at a meeting of the officers held at League Headquarters in January, President Beach presiding, to the effect that buttons should be sent direct from the Treasurer's office and shall serve as his receipt, the Treasurer has had no alternative but to abide by the ruling. It is hoped that his position has been understood by those who made requests and that his letter of explanation met with their approval. It is obvious that if allotments of buttons were sent to many meetings in various sections of the country, the League would be compelled to have an investment in buttons amounting to several thousands of dollars. This the funds will not permit.

There is also another serious objection. The button is supplied gratis to members who have joined since the first of January, 1918. To those who joined before, it is sold for twenty-five cents, which is approximately cost. Without a complete directory of the 5,900 older members, it is impossible for those handling the buttons at a meeting to know who is entitled to purchase them. Therefore, some men might be wearing the buttons who were really not members of the League. The officers I am sure might be glad to consider any feasible suggestion by which it would be possible to have buttons at the various meetings. There was delay in sending the buttons in February, because of disappointment in manufacture, but since that time buttons have been sent out regularly each week. Under the present plan, when the member receives a button, it is assured that his name has been registered on the official list.

The following figures show the amount of work done by the Preparedness League to June 1st, 1918:

Men Examined	84,518
Men worked for and reported by card	63,625
Fillings Inserted	180,593
Teeth Extracted	67,247
Plates Made	630
Crowns Made	2,040
Crowns and Bridges	165
Bridges	885
Prophylaxis Treatments	33,671
Diseased Teeth Treated.	3,165
Miscellaneous Operations	48,535
Total Operations Performed	336,931

The above report is taken from tabulated statistics made by Major W. A. Heckard.

DR. CHARLES H. MAYO ON TEETH

No less authority than Dr. Charles H. Mayo, one of the heads of the Mayo clinic at Rochester, Minnesota, who is among the foremost surgeons in America, summed up the situation in a speech before the research institute of the National Dental Association at Cleveland in these words:

"The next great advance in the prevention of disease, and that wherein dentists are so much interested, is the knowledge that chronic diseases, acute diseases and special local diseases, such as neuritis, sciatica, and acute paralysis, come from mouth infections in the majority of instances; also that appendicitis, diseases of the gall bladder and ulcerated stomach are caused by bacterial infarcts (decayed or obstructed areas) in the capillary circulation at the base of the mucous cells in these organs and is caused in the same manner from local infections. While there are several sources in the body for the entrance of bacteria and their culture (growth) in a local focus, the mouth is far the most common situation. The tonsils very commonly harbor disease germs. In pyorrhea we find these germs in cavities and abscess at the roots of teeth from natural decay, and in special abscesses at the apex of a tooth, all of which are often the result of faulty or old-time dentistry."

ONE HALF MILLION OPERATIONS FREE

One half million operations free is the achievement of the Preparedness League of American Dentists, an organization comprising more than 15,000 dentists in the United States. They have pledged themselves to give at least one hour of their time daily, including materials, to men selected for the Army, Navy, and Marine Corps. The half million mark was reached early in July.

The Preparedness League, started by Dr. J. W. Beach of Buffalo, President of the League, is under the direction of Director General Dr. Charles F. Ash, New York, and is being carried on with the approval and coöperation of the Provost Marshal General and the Surgeon Generals of the Army and the Navy. Dental Colleges throughout the country are contributing their services, equipment, and materials to help in the work.

According to the present law, only one dentist is allotted to every 1,000 men in the army. The League is supplementing this work of making recruits dentally fit, by making not only fillings and extractions, but by supplying thousands of crowns and bridges free of charge. In this way, many thousands of men, who had less than the minimum dental requirements to fit them for General Military Service, are able to be inducted into the service.

It has been estimated that if the mouths of American soldiers be kept clean from diseased teeth, 20% of the men in hospitals, because of dental infections, will be available for service in the trenches, and the 20% of extra beds will be available for men wounded in war. Thus, according to the League, not only will the efficiency of the army be increased, but its morale, whereas the government will save the hospital expense which these men would incur.

Statistics from hospitals at the front, announces the League, show that 20% of the men in the sick wards are there because of diseases arising from infections from diseased teeth.

The League has estimated that on the basis of an eight hour day, the average dentist of the organization gives 12% of his income to his country, plus his materials besides the many civilian contributions which he makes to patriotic campaigns. Some dentists give two and three hours' time daily.

There are 48,664 dentists in the United States and the League is trying to obtain 100% membership at \$1 a year. The only expense is for the distribution of literature and correspondence, which, it has been figured out, brings the cost of operation to an average of five cents an operation.

The League is divided into six military departments headed by a director for each department. Each of these directorates in turn is subdivided and managed by a director for each state, under whom are sub-directors for cities and counties. Most of the energies of the League will be devoted to men qualified for military service.

"These are the men," explained Dr. Ash, "who will do the actual fighting and who must live in the trenches, and who consequently are more subject to sickness and infection. The most important thing to do for these men is to rid their mouths of bad roots and infected teeth, or any tooth having a history of periodical abscess. The lack of the minimum number of teeth does not excuse any man from military service, but only from General Military Service! The man may be accepted for 'Limited Military Service' even if he has no teeth."

"In all the states, dentists have been appointed members of the Medical Boards, thus enabling coöperation of physicians and dentists. On every local board in the United States, dentists who have volunteered their services have been appointed. It is the duty of these men to examine the mouths and teeth of the Registrants and send those certified for General Military Service to members of the Preparedness League who are prepared to give them free dental service.

"It is inevitable some men will have been sent to camp as certified for class I-A, who should have been certified for Special or Limited Military Service. When such a man is reexamined and sent back from camp, it means expense to the Government and embarrassment to the Local Board. The principal thing the Government is anxious to guard against is injustice to the registrant. Thus if the recruit's teeth are examined thoroughly by the dental representative on the Local Board, the possibility of passing men who have less than the minimum dental requirements will be appreciably reduced."

NAVAL APPROPRIATION BILL—PROVISION FOR THE NAVAL DENTAL CORPS

[AMENDMENT No. 23, AS AMENDED.]

The provision for the Naval Dental Corps (Amendment No. 23), was amended to read as follows:

That the Act approved August 29, 1916, entitled "An Act making appropriation for the Naval Service for the fiscal year ending June 30, 1917, and for other purposes" (Statutes at Large, vol. 39, chapter 417, pp. 573, 574), be, and the same is hereby, amended by striking out all

of said Act following the caption "Naval Dental Corps," on page 573, but preceding the caption "Dental Reserve Corps" on page 574, and by substituting therefor the following:

That the President of the United States is hereby authorized to appoint and commission, by and with advice and consent of the Senate, dental officers in the Navy at the rate of one for each thousand of the total authorized number of officers and enlisted men of the Navy and Marine Corps, in the grades of assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, who shall constitute the Naval Dental Corps, and shall be a part of the Medical Department of the Navy. Original appointments to the Naval Dental Corps shall be made in the grade of assistant dental surgeon with the rank of lieutenant (junior grade) and all dental officers now in the dental corps appointed under the provisions of the Act of Congress approved August 22, 1912 (Stat. at L., ch. 37, p. 345), or under the provisions of the Act of Congress approved August 29, 1916 (Stat. at L., ch. 39, p. 573), or may hereafter be appointed, shall take rank and precedence with officers of the Naval Medical Corps of the same rank according to the dates of their respective commissions or original appointments, and all such dental officers shall be eligible for advancement in grade and rank in the same manner and under the same conditions as officers of the Naval Medical Corps with or next after whom they take precedence, and shall receive the same pay and allowances as officers of corresponding rank and length of service in the Naval Medical Corps up to and including the rank of lieutenant-commander: *Provided*, That dental surgeons shall be eligible for advancement in pay and allowances, but not in rank, to and including the pay and allowances of commander and captain, subject to such examinations as the Secretary of the Navy may prescribe, except that the number of dental surgeons with the pay and allowances of captain shall not exceed $4\frac{1}{2}$ per cent, and the number of dental surgeons with the pay and allowances of commander shall not exceed 8 per cent. of the total authorized number of dental officers: *Provided further*, That dental surgeons shall be eligible for advancement to the pay and allowances of commander and captain when their total active service as dental officers in the Navy is such that if rendered as officers of the Naval Medical Corps it would place them in the list of medical officers with the pay and allowances of commander or captain, as the case may be: *And provided further*, That dental officers who shall have gained or lost numbers on the Navy list shall be considered to have gained or lost service accordingly; and the time served by dental officers on active duty as acting assistant dental surgeons and assistant dental surgeons under provisions of law existing prior to the passage of this Act shall be reckoned in com-

puting the increased service pay and service for precedence and promotion of dental officers herein authorized or heretofore appointed.

All appointees authorized by this Act shall be citizens of the United States between twenty-one and thirty-two years of age, and shall be graduates of standard medical or dental colleges and trained in the several branches of dentistry, and shall, before appointment, have successfully passed mental, moral, physical, and professional examinations before medical and professional examining boards appointed by the Secretary of the Navy, and have been recommended for appointment by such boards: *Provided*, That hereafter no person shall be appointed as assistant dental surgeon in the Navy who is not a graduate of a standard medical or dental college.

Officers of the Naval Dental Corps shall become eligible for retirement in the same manner and under the same conditions as now prescribed by law for officers of the Naval Medical Corps, except that section 1445 of the Revised Statutes of the United States shall not be applicable to dental officers, and they shall not be entitled to rank above lieutenant-commander on the retired list, or to retired pay above that of captain.

All dental officers now serving under probationary appointments shall become immediately eligible for permanent appointment under the provisions of this Act, subject to the examinations prescribed by the Secretary of the Navy for original appointment as dental officers, and may be appointed assistant dental surgeon with the rank of lieutenant (junior grade) to rank from the date of their probationary appointments: *Provided*, That the senior dental officer now at the United States Naval Academy shall not be displaced by the provisions of this Act, and he shall hereafter have the grade of dental surgeon, and the rank, pay, and allowances of lieutenant-commander, and he shall not be eligible for retirement before he has reached the age of seventy years, except for physical disability incurred in the line of duty: *Provided further*, That no dental officer in the Navy, who on original appointment as dental officer was over forty years of age shall be eligible for retirement before he has reached the age of seventy years, except for physical disability incurred in the line of duty.

All acts or parts of acts inconsistent with the provisions of this Act relating to the Dental Corps of the Navy are hereby repealed: *Provided*, That nothing herein contained shall be construed to legislate out of the service any officer now in the Medical Department of the Navy, or to reduce the rank, pay, or allowances now authorized by law for any officer of the Navy.

Approved.



In Flanders' Fields

In Flanders' fields the poppies blow
Between the crosses, row on row,
That mark our place, and in the sky
The larks still bravely singing fly,
Scarce heard amidst the guns below.
We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved, and now we lie
In Flanders' fields.

Take up our quarrel with the foe,
To you from falling hands we throw
The Torch—be yours to hold it high;
If ye break faith with us who die,
We shall not sleep though poppies grow
In Flanders' fields.

Written by Colonel John McCrae
of Guelph, Ontario, Canada
Serving in France
1917

—The Inland Printer

DENTAL ECONOMICS

STEPS TO VICTORY

WORK

The duty that rests upon each producer of the United States is to exert his greatest possible effort in turning out those things necessary for the war. What is required urgently is the product of our farms, mines and shops. We are not all farmers and miners. Nor are all of us mechanics. But we all have our part to play in conducting business energetically and in doing our utmost to bring about a speeding of the wheels of industry.

The duty of the farmer, the miner and the mechanic is clear—just as clear as the duty of the soldier and sailor daring all things in the trenches and the minefields. That duty is to labor with more zeal than ever before. Food, fuel and machines are the present-day staples of war, and America's ultimate success or failure lies in the plough, the pick and the lathe.

This fact does not for an instant, however, modify the duty of the railroad worker or steamship man, the merchant, the banker or the clerk. It enlarges it. Every human effort is necessary henceforward to bring about a right distribution of the commodities. The sum total of America's finished products are released, from month to month, by the producers to the shipping men, the merchants and all the others, and the nation can afford no apathy on the part of these men in dealing with the responsibilities imposed upon them. An indifference to duty on the part of any one man engaged in commerce or finance will serve directly to weaken the nation in the task it has undertaken.

So, then, we are all called upon to augment our efforts, and thus meet the demands of a situation bigger than any present vision can fully comprehend. Hard work will supply and properly distribute the goods needed in this emergency. Every nation that has gone to war has had to speed up labor. Men left at home have had to take the place of those drawn away. They have had to work longer hours, and work faster than before.

It is an unsupportable fallacy that the business of peace can go on as usual under the superimposed burden created by the war. It simply cannot be done. We haven't the machinery and labor, and cannot get them. Our work, then, must be directed with one constant aim before us: the aim to do our utmost to win the war.

Our chief characteristic, as Americans, is unbounded energy. Properly directed, that energy will enable the nation to devote every available atom of its resources to the purpose for which those resources are enlisted. Enthusiastic application of this energy, becoming sporadic when the enthusiasm wanes, will not do. A steady and persistent application, becoming increasingly intense as the need increases, will do splendidly.

The war is not a side issue. It is the biggest and most serious thing America has ever faced, and in the crisis we must keep that thought constantly before us. The cost of the war to the United States is calculated at more than a billion dollars a month. This means that in turning our energies to the manufacture of war indispensables, a billion dollars' worth of labor and materials must be diverted regularly, every month, away from the gratification of our personal needs and desires. A billion dollars equals 30 per cent. of the American people's monthly income.

Can we effectively divert so large a percentage of our income to war purpose without application of every possible ounce of effort and self-denial? Hardly.

The experience of other nations must become the example of the United States, none the less because we have no other source from whence to draw our economic strength than from ourselves. Every particle of food, every bit of clothing, every rifle, gun, cartridge and shell used by our men abroad must be supplied from the United States. Ours is a stern obligation, the surmounting of which requires the support of every American citizen.—*The Mechanics and Metals National Bank of the City of New York.*

A LONG LONG WAY TO PEACE

The *Temps of Paris* commenting on the action of the recent Socialist congress in London, warns people against the idea that war can be abolished by thinking it should be abolished. It says: "Statistics show that from 1496 B. C. to 1861 A. D. there were 227 years of peace and 3,130 years of war; that is, one year of peace to fifteen of war."

HOW IT WORRIES THE GERMANS

The fact that there are still a number of American dentists practising in Germany is the subject of angry comment in letters to the *Cologne Gazette*.

The writers complain that the business of the German dentists now in the field with the army is rapidly falling into the hands of these Americans, and declare it "scandalous" that Americans should be permitted to attend the injured jaws of German soldiers and that no reprisals have been instituted against them for the measures taken against German business interests in the United States.

The main grievance seems to be that people still insist upon consulting the American dentists, whose reception rooms, says another correspondent, are "filled with society people who think it is fashionable to be charged steep prices on bills made out in English."—*New York World*.

HOW IT WORRIES THE ENGLISH

We understand that some of the Oral Surgeons attached to the American Army are now undertaking courses of instruction in certain of the English Military Hospitals. We learn, as was to be expected, our colleagues from the United States are showing the greatest keenness and enthusiasm over their work. We assure them that their presence among us is very welcome and that we look forward to the admirable service which we are certain they will accomplish for the benefit of humanity and the cause of the Allies. No professional jealousies in this work of ours—war or otherwise. In the past many English dentists have greatly benefited by courses of study in American Universities; if, now, our experience of jaw surgery is of value to them, we shall welcome our confrères to hospitals in the same spirit which has so often been shown toward Britishers at Pennsylvania and other schools in the States.—*British Dental Journal*.

LETTERS MAKING HISTORY

W. S. S. These initials are becoming familiar and so is their Wise, Solvent Suggestion. War Savings Stamps are better than the currency of the realm, for they are all that, plus earnings.

What's So Secure? What's So Sure? What's Saved Swims; What's Spent Sinks; Who Saves, Swells; Who Spends, Shrinks.

What Superlative Security! W. S. S. means all this, and more.

THRIFT IS THE RIGHT THING

THRIFT is the enemy of debt.

THRIFT is the basis of every large fortune.

THRIFT develops patient self-denial so vital to greatness of character.

THRIFT promotes peace of mind, personal comfort, and the good-will of the community in which one lives.

THRIFT, which implies habits of economy, safeguards one against self-indulgence, misery, poverty, and failure.

THRIFT brings increased happiness to oneself and family, and adds to the real wealth of one's country.

THRIFT induces one to save systematically and intelligently, so that each succeeding day finds one better off than before.

THRIFT means care and wisdom in the management of one's resources.

THRIFT gives one a gratifying sense of self-respect and progress, and leads steadily and surely to prosperity and happiness.

THRIFT is evidence of practical common sense, sound judgment, and wise prudence, because it is willing to make present sacrifice for future competence.

THRIFT lifts one out of the large class of men who spend all they make, have nothing for the future, and are self-elected victims of daily fear and uncertainty.

THRIFT is a wise provision for possible emergencies, times of illness or disaster, and a sure protection for old age.

HOLD YOUR LIBERTY BONDS

To successfully finance the war it is necessary that owners of Liberty Bonds hold their bonds if possible. Where for any good reason it is necessary for them to turn their bonds into cash they should seek the advice of their bankers.

Liberty loan bonds are very desirable investments, and crafty individuals are using various means to secure them from owners not familiar with stock values and like matters. One method is to offer to exchange for Liberty bonds stocks or bonds of doubtful organizations represented as returning a much higher income than the bonds.

There are various other methods used and likely to be used, some of the gold-brick variety, and others less crude and probably within the limits of the law. All offers for Liberty Bonds except for money and at market value, should be scrutinized carefully. The bonds are the safest of investments and have nontaxable and other valuable features.

DIETETICS AND HEALTH

A DENTIST IN THE KAISER'S KINGDOM OF SORROWS

Dentists are making history in this great world war. Any member of the profession who reads of the work of The Preparedness League of American Dentists should feel proud of the work that is being done.

We know, without any guessing in the matter, that the Kaiser's soldiers, notwithstanding the boasted "German efficiency" legend, are not getting as good dental treatment as the Americans, if, indeed, they are getting any at all. And the Kaiser himself is now deprived, probably forever, of his expert American dentist, with what result remains to be seen.

Dr. Davis was obliged to flee from Germany for reasons which he has published in a series of articles in the N. Y. *World*, and his story will certainly be interesting for any one to read, and especially so for dentists.

Quoting a few incidents from these articles gives a very fair idea of the Doctor's tribulations before he succeeded in getting out of the Kaiser's Kingdom of Sorrows:

"Although the Government decreed a high fine and imprisonment as punishment for buying or selling anything which had been commandeered, speculators sprang up on every side and people bragged openly of what they had stored away.

"An officer on a train was overheard to say: 'One half of the women in this town should be in the insane asylum and the other half in jail.' When asked the reason for his cryptic remark, he explained: 'Well, half the women ought to be in jail for hamstering—hoarding—and the rest of them, who are not hoarding, must certainly be crazy!' Every patient who came into my office bragged about some forbidden article of food which he or she had purchased, and complained of the awful price exacted for it.

"One speculator used to telephone my wife regularly, identifying himself by the password: 'This is your good friend. Are you going to be at home this morning?' Needless to say, my wife usually managed to

be in, as it meant food. Sometimes he had fifty pounds of butter at \$5 a pound. Another time it might be 200 pounds of dried peas at 75 cents a pound. Whatever it was, we usually took all he had to sell, as it was a simple matter to share it with our friends.

"From one man we bought 200 pounds of flour and the same quantity of sugar, each at \$1 a pound. The huge sacks were brought to us through the streets by men disguised as soldiers, their military garb protecting them against molestation by the police, who believed that it was being carried from one barracks to another. The men who brought the sacks to us declared that the stuff had been stolen from a soldiers' hospital.

"One patient from Dresden brought me some sausage made from an elephant that had died in the Zoo! Another offered to sell me a very cheap ham—\$20. When it arrived it turned out to be half of a pig's head, smoked, with the teeth, an eye and an ear very much in evidence.

"As time went on there seemed to be almost no real food to be had, and I feel that I possibly owe the life of my child to Mrs. Gerard, who so kindly left us a large supply of her good American stores when she left Berlin.

"In November, 1917, I paid \$100 for a suit of clothes which if it had been made out of cloth of good quality would have been worth about \$35. As it was, the tailor frankly admitted that the goods were made of reworked yarn, and because of the lack of cotton thread the seams were worked with a material which looked like paper string.

"Almost every woman in the land, princess or maid, was attired in art taffeta. It sold for \$10 a yard. In normal times it would have been worth from 75 cents to \$1. In the fall of 1917, a cloth suit was unobtainable for less than \$300. It would have been worth \$25 in normal times.

"Through speculators we obtained some imitation soft soap at \$4 a pound. People said it was made from human corpses, but it was the only thing available outside of the substitutes, which were soap only in name. A small cake of toilet soap easily brought \$3. We paid as high as \$8 a pound for butter from a speculator, and my last Christmas dinner in Berlin consisted of a small goose, just enough for one meal for three persons, for which I paid \$25.

"Shopping by the card system was very complicated and the quantities permitted by the ration cards so small that a well balanced meal was an impossibility. To dine in a restaurant it was necessary to take a whole pocketful of cards and make a careful analysis of them before ordering the meagre meal which the law allowed.

"Empty boxes were used to decorate the depleted show windows of the shops. The fact that they were empty was not known to the public and very often the windows would be broken by hungry mobs who

couldn't resist the sight of what appeared to be so much food. This led the Government to order the shopkeepers to label the boxes: 'Empty Boxes' in order to avert such disturbances and riots.

"There was simply nothing to buy in the food line except substitutes, and of these there were hundreds, each worse than the last. The remark, 'If things get much worse, we shall soon be eating rats as the Parisians did in 1870,' brought the rejoinder: 'Well, that wouldn't be so bad; what I'm dreading is the time when we shall have to be content with rat substitute!'"

YEAST NUTRIENTS IN BREAD MAKING

Two years ago, investigators at the Mellon Institute for Industrial Research announced that the addition to the ingredients of bread of a small amount of a mixture of calcium chlorid, ammonium sulphate and potassium bromate permits the use of approximately one half as much yeast as would otherwise be needed. They stated further that a goodly amount of sugar and flour was saved from unnecessary destruction by the action of yeast alone. As regards quality, texture, color and "bloom" the bread was regarded as superior. The *Journal* at that time pointed out the advantage of a large annual saving of yeast and sugar, and also that even the relatively small restoration of mineral salts to a bread prepared from a demineralized patent flour was desirable from a medical point of view.

As soon as the salt mixture came into wide commercial use, however, its employment was attacked because of the alleged introduction in bread of "objectional mineral ingredients." J. P. Street, chief chemist of the Connecticut Agricultural Experiment Station, therefore investigated the "advantages or disadvantages following the use" of a mineral yeast food. In a rather exhaustive report of his examinations, Street apparently demonstrated that the quality of the bread was improved irrespective of the grade of flour employed, and that the bread made with the yeast nutrients did not contain more moisture, as had been charged. Taking up the study of the respective mineral ingredients which composed the yeast food, it became necessary to learn the fate of the mineral salts in the bread and what effect, if any, they had on its wholesomeness. The principal yeast nutrient, calcium sulphate, was found in the finished product in the form of sulphate amounting to 0.135 per cent., or little less than twice the amount present in breads made without the addition of yeast nutrients. Commenting on this phase, Street says

that "many of our common foods are deficient in lime, and while the slightly increased content of lime in the yeast nutrient breads has little practical significance, its effects, if any, would be beneficial rather than injurious." In the case of ammonium chlorid, it was found to be mostly utilized by the yeast; the slight amount not so utilized was in a quantity comparable to that present in many of our well known foods. The third active component, potassium bromate, seems, according to the Connecticut investigation, to be converted to potassium bromid in the bread. The amount of bromin—0.58 per hundred thousand parts—present in the form of bromid in bread made by the aid of the mineral salts is ridiculously small, as a large number of common natural food products contain as much or more; hence the physiologic effect is probably nil. As a result of his work, Street agrees with the statements of Winslow and Falk of the Yale Medical School, who state in substance that if the results of this experiment taken as a whole indicate any effect of calcium sulphate, ammonium chlorid and potassium bromid on the digestibility of bread, the effect is a favorable rather than an inhibitory one. "We may safely conclude that the digestibility of bread made with yeast nutrient salts is not affected by the yeast food used in its manufacture."

From the standpoint of economics, it is interesting to note that in making 1,000 loaves, weighing $1\frac{1}{2}$ pounds each, and using $4\frac{9}{10}$ pounds of the nutrient salt mixture, there was saved $9\frac{1}{2}$ pounds of flour, $4\frac{1}{2}$ pounds of sugar, and $5\frac{1}{2}$ pounds of yeast. Considering the millions of loaves made annually, such a conservation, when economy is national policy, is well worthy of careful attention. While the question is primarily an economic one, it has at the same time an indirect interest for the medical profession, since the possibility of harm to health exists. The work so far done does not indicate any probability of physical harm; at the same time it is well to await further developments before reaching any definite conclusion.—*Journal A. M. Association.*

VITAMINES

There are many important elements of food which are not fully understood. One of these which does not come under the head of either proteins or carbohydrates is so important as to deserve a word of attention. It is known that there exist, perhaps in minute quantities, in all cereals, vegetables and fruits certain substances not yet isolated but essential to the continuation of life and health which, for want of a better term, are known as "vitamines." Their presence and importance can be demonstrated as follows: If chickens are fed on wheat kernels without

the bran, they will die of starvation. If the bran be analyzed into those chemical constituents which can now be recognized, and then those constituents be assembled in chemically pure form and in proper quantities, and fed to the chickens, the chickens will die of starvation. If, however, the chickens be fed upon the whole kernels, including the bran, they will thrive. Nature is so consummate a chemist that she has hidden something in the bran which our most exhaustive processes cannot detect and that something is essential to the continuation of health and life. The white flour which we had before the war is typical of food which, in the course of its preparation, has been robbed of its vitamines. It is therefore literally not a food of life but a food of death. This is true of many other refined forms of food. Yeast is rich in vitamines, so is lime water; so are the outer coverings of all the cereals. Extreme degrees of the absence of vitamines produce scurvy and rickets.—*Pacific Dental Gazette.*

THE SALIVA AND DENTAL DECAY

Decay of the teeth offers a serious problem not only to the dentist but also to the physiologist and pathologist, who are primarily interested in the etiologic factors. The microbiology of the mouth cavity has received special attention since the early days of modern bacteriology. The possible relation of the oral micro-organisms, which include the animal protozoan parasites, intermediate forms, such as spirochetes, and true bacteria, to dental caries has often been suggested without being clearly demonstrated. According to Kligler, the early stages of caries are characterized by a decided alteration in the relative abundance of types as they occur in deposits on normal teeth. Three forms, the *B. acidophilus*, the *C. placoides* and the *L. buccalis*, are prominent in the carious enamel deposits. In pulp decay an anaerobic, spore-bearing, putrefactive bacillus, *B. putrificus*, is always prominent. The organisms prevalent in primary enamel decay very actively, ferment the common sugars and bring about comparatively great dissolution of powdered tooth. The organisms in deposits on normal teeth and in the later stages of caries exert either slight effects or none at all in these relations. There is, further, the possibility of a systemic factor predisposing to dental caries. This problem has received some attention from Gies and his collaborators at Columbia University, and they have come to a tentative conclusion: "That the systemic condition of the individual is an important factor in susceptibility to dental caries is a conviction that we cannot dismiss. Nevertheless, direct external attack upon teeth by

micro-organisms appears to be the most important single factor in the carious processes." A third possibility in the etiology of dental caries lies in the saliva. This has been the subject of vigorous debate in the past few years. In 1915, Marshall proposed what he termed a "salivary factor" as an index of immunity from caries. It represented a ratio between the mathematical expression for the total neutralizing power of "normal resting" saliva and normal "activated" saliva—that provoked by special stimulation—in the same individual. Assuming that the saliva is amphoteric, Marshall concluded that for it to be a factor in protecting the teeth it must neutralize either acid or alkaline substances as taken into the mouth, and that it is the degree of this power to maintain a neutrality in the mouth that is indicative of the susceptibility to caries. This hypothesis has been the subject of vigorous differences of opinion. The tendency has been to discredit the value of any such salivary factor. The most recent investigators of the problem at the Forsyth Dental Infirmary for Children, Boston, have demonstrated anew that the saliva of persons with teeth immune to decay varies, as does also the saliva of persons with carious teeth; that saliva may neutralize substances taken into the mouth and that the average immune mouth has the greater power of neutralization; but the ratio of resting and activated saliva in immune mouths does not vary enough from that of carious mouths to prove that this ratio is indicative of the production and maintenance of immunity from caries in any individual. Evidently other directions must be sought for new attacks on an ever present problem.—*Journal A. M. Association.*

NINETY YEARS YOUNG

Age alone means nothing. We know nonagenarian people very close to the century mark, who are much brighter, much more alert to what is going on in the world, much more interested in modern problems, than are their children or grandchildren. Age alone means nothing. A man of ninety may be young, a man of thirty may be a walking corpse. It is the mind that counts.—W. J. ROBINSON, M.D.

THEN THERE'S BILLY SUNDAY

Every day in the week is Sunday (or a Sabbath day) if you know where to look for it. The Greeks observe Monday; the Persians Tuesday; the Assyrians Wednesday; the Egyptians Thursday; the Turks Friday; the Jews Saturday; the Christians Sunday.

PRACTICAL HINTS

This department is in charge of Dr. V. C. Smedley, 604 California Bldg., Denver, Colo. To avoid unnecessary delay, Hints, Questions, and Answers should be sent direct to him.

Editor DENTAL DIGEST:

In reply to Dr. R. W. Van Valin "How can I remove Ag NO₃ stains from porcelain washbowl" in June number of DIGEST, I have found the following to do the trick with such stains on towels, and I should think would do the trick equally as well on porcelain washbowl.

Touch stain with Tincture of Iodine, allow to remain about two minutes, then wash towel in cold water and soap to remove Iodine stain. Presto! all stain is gone. The Iodine also removes those black stains from hands after handling Ag NO₃. Try it and be convinced.

A. M. GEESEY.

Editor DENTAL DIGEST:

In the June issue of the DENTAL DIGEST there appears a query as to the cause of a fit which happened to a young man having a *gold crown* on a lateral incisor. Well, any one who would have a *gold crown* placed on a *front tooth* ought to have a fit, as should the operator who (if ethical) would do it in these days. Barbaric dentistry is in bad taste to say the least—pardon the criticism, but it is spontaneous. Postscriptly speaking the probable cause was a reflex action of the nerves.

WALTER F. LEWIS, D.D.S.

Editor DENTAL DIGEST:

I am very interested in the nerve blocking system of relieving pain, and desire to obtain all the knowledge possible. Could you tell me where I might obtain a book which would give me some information on the subject. Any information you give me will be greatly appreciated.

I am Sincerely,

E. S. PETERSON.

ANSWER.—You can obtain the desired information from Kurt H. Thoma's "Oral Anaesthesia," or Guido Fischer's "Local Anaesthesia in Dentistry."—V. C. S.

Editor DENTAL DIGEST:

I am a subscriber to the DENTAL DIGEST, and would appreciate an answer to the following question, in same:

How can you prevent the dark discoloration of a central to show through a Porcelain Veneer Crown? I used cement which would not prevent this.

Thanking you for the information.

E. P. GRADY, D.D.S.

ANSWER.—Would suggest that after the crown is completed you cut the labial portion of the discolored tooth back a little farther, leaving room for an appreciable thickness of cement. Any good Oxy-phosphate of zinc cement is impervious to light if there is any thickness or body to it.

V. C. S.

To CLEAN A BLOCKED HYPODERMIC NEEDLE:—To unblock long hypodermic needles, screw needles on syringe tightly, put distilled water in barrel, hold needle in flame and apply pressure with piston. Steam is thus created in the immediate vicinity of flame which exerts pressure sufficient to unblock the needle. Reader should bear in mind that passing through flame removes the temper and care should be taken in its use.—H. M. HALPERON, *Dental Review*.

To HOLD AN INLAY WHILE CEMENTING:—You are setting an inlay in the back of the mouth. You need a handle on the inlay; you cannot pick it up with your fingers to place it; it may snap out of your pilers; just a drop of hard wax on the inlay. Now warm a square end burnisher or amalgam plugger, place the point into the wax, instantly it is hard and you have the inlay so you can place it correctly after the cavity is smeared with cement and an instrument with which you can force it to place quickly, thus enabling you to use a thicker mix.—E. J. PERRY, *Dental Review*.

AMBRINE.—This much advertised French preparation, which has been recommended so highly for burns, consists principally of hard paraffin, to which its efficacy is entirely due. Like many proprietary preparations of a secret nature, its composition is not always constant. It consists essentially of a hard paraffin combined with a small quantity of an asphalt-like body, with which combination a fatty oil has been incorporated. Undoubtedly a number of commercial paraffins on the market even without admixture of other substances will be found to

answer just as well, in fact some observers have found them decidedly superior to ambrine. There is no reason why a simple paraffin wax, with a melting-point of between 44° and 48° C., should not answer every requirement for making these paraffin films.—*Journ. A. M. A.*

VINEGAR FOR SOFTENING PLASTER OF PARIS.—Vinegar, having the property of disintegrating plaster may be employed in the laboratory for removing plaster from flasks, by immersing for a few seconds only; for removing casts from articulator by applying over bows only; cleaning impression trays, etc.—LESTER N. ROUBERT, *Dental Review*.

To RENEW ARKANSAS STONES:—When the surface of your Arkansas stone has become oil soaked and worn unevenly it may be resurfaced as good as new by rubbing back and forth with a planing motion upon a piece of emery cloth laid “face up” upon the surface of the laboratory bench.—*Dental Review*.

THE FLETCHER METHOD OF MIXING AMALGAM

Fletcher's method consists in weighing the proportions of alloy and mercury, placing them in a small test tube and shaking the tube until all the free mercury disappears. The resulting powdery mix is then formed into a cylinder by compression in a wooden mould devised for the purpose. Dr. Osgood, an American dentist, effected an improvement a few years ago, by introducing a steel mould and plunger known as the Osgood-Fletcher mould.

An amalgam which, when mixed in the usual way, gives a preliminary contraction of one or two points and an expansion that exceeds the amount of contraction, will show no contraction and an increased expansion if mixed by Fletcher's method. An amalgam that shows one or two points of contraction and no expansion will show no contraction if the Fletcher mix be used. Of course, no method of mixing will turn a bad amalgam into a good one, but given a good alloy, then I venture to say that the Fletcher method will enable it to be used to the best advantage. The value of this method appears to consist in shaking the alloy and mercury together and so avoiding the rubbing which disturbs the harmony of the alloy. The principal, if not the sole value of the mould appears to be the formation of a mass that is solid enough to be readily conveyed to cavities when cut up into pieces of suitable size.—*British Dental Journal*.

CEMENT AND GUTTA-PERCHA FILLINGS

We have heard a lot said about cavity preparation and we can not hear too much, judging from what we see daily—"Cavity preparations for gold inlays," "Cavity preparation for porcelain inlays," "Cavity preparation for amalgam fillings." But—not enough is said about cavity preparation for gutta-percha and especially for cement fillings. If a cavity for a cement filling is properly prepared and the cement given lots of time to "harden," a cement filling is a wonderful filling. "What is the *right or best way?*" Why ask? You know. Simply *take your time*, trim off the very frail edges, smooth off the margins. Alcohol and dry it, then oil of cloves and dry it, and you will be saving teeth. And that's your job. Gutta-percha fillings will be most effective if the cavity has solid flat walls and right angle edges—and—cleared with alcohol and oil of cloves and thoroughly dried. Cement must have lots of time to set.—HOMER ALMON, *Dental Review*.

USE OF ARSENIC FOR DESTROYING PULPS

My experience with arsenic as a safe destroyer of pulps was shattered many years ago, and my continued observations and study of this subject strongly confirm this previous opinion. Note that I designate this as an opinion. Nothing definite has been given to the dental profession as to whether arsenical destruction of the pulp is or is not responsible for many of the injuries to the peridental membrane at the apices of the roots. We all know what arsenic will do when it leaks through a temporary filling or when it reaches a false opening in root-canals or pulp chamber. The great destruction wrought in these cases seems to show beyond question that it is not self-limiting, and also shows very conclusively that it is an extremely dangerous drug. Many of the best men in the profession have abandoned the use of arsenic, and I firmly believe that before many years it will be eliminated by all the best-informed dental practitioners.—F. W. GETHRO, *Dental Review*.

FRACTURES OF MANDIBLE AND MAXILLA

In fractures of both mandible and maxilla some form of double gunning splint must be adopted, being necessarily removable. If there is no displacement in the upper jaw and the teeth only require to be steadied, the splint may consist of upper and lower metal caps soldered together. If there is gross displacement of the palate, or perforation, a vulcanite upper with a metal lower cap can be used with advantage. If the fracture is accompanied by extensive laceration of the soft parts an

interdental extension has been found of great service in preventing subsequent closure from cicatricial contraction, and as an aid to feeding where the occlusion is nearly perfect. This should be accompanied by some form of chin support, such as the aluminum chin cap and head net, which has been the method most favored for immobilization at this centre. A broad rubber elastic bandage has also been used, and a Hamilton bandage with chin piece.—*Pacific Dental Gazette*.

EFFICIENCY.—In the fertile field of dentistry there is a wonderful opportunity for roots of the plant called "Efficiency" to develop. Have a plan to work by, i.e., First, do it right; second, with as little pain as possible; third, as quickly as possible; fourth, try to do the present operation a bit better than the last one. One might add, stop talking to your patient, but keep your mind on your work; stop puttering and lumbering around, looking for this or that instrument, plan three or four moves ahead and your patient will quickly realize your efficiency.—W. O. FELLMAN, in *Dental Review*.

A REMARKABLE WAR BOOK FOR DENTISTS

ARMY DENTISTRY—504 pages, 171 illustrations, with Index and Frontispiece (a portrait of Thomas Alexander Forsyth). The book consists of a series of lectures delivered under the auspices of the Forsyth Dental Infirmary, for the Army Dental Corps, to be known as the Forsyth Lectures, and edited by Frederick A. Keyes, D.M.D. Published by D. Appleton & Co., New York.

These lectures were attended by over 600 practising dentists. Before taking the course each man was informed that at its completion he would be expected to take his examination for the United States Army immediately, and be ready for duty in France at once. Not one applicant refused to take the course.

"It is hoped that the compilation of these lectures into book form," the editor says, "will aid many dentists throughout the country who were unable to attend the course, to prepare for the Army Dental Corps. The book is not intended as a complete text-book, but rather a compendium of dental information for review purposes. If it shall enable any one who reads it to render more efficient service in the field of military dentistry, it will have served its purpose and justified its existence."



HE WOULDN'T USE HIS TOOTHBRUSH

Little Johnny had a toothbrush
And he hung it on the wall,
Morning, noon and night it hung there,
And he used it—not at all.

Then one day while at the table—
He began to scream and cry,—
“Oh my teeth, my teeth, they hurt me!
Mother dear, I know I’ll die!”

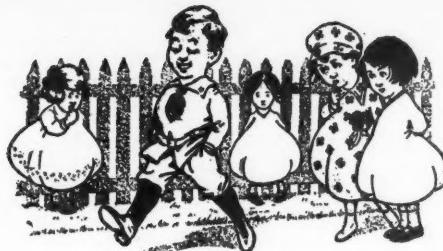
Mother took him to the dentist,
But the dentist shook his head—
“Oh, ‘tis too bad! Too bad! Johnny,
You must lose them all,” he said.

It’s too late for little Johnny,
But it may not be for you:
Use your toothbrush three times daily,
Now will you? and you? and YOU?

The DENTAL DIGEST is always ready to assist in any movement that favors the conservation of child life. Knowing that a clean mouth and perfect teeth mean much in the early stages of life, there should be no hesitation on any one's part to advance prophylactic measures.

All children have a right to be strong and healthy. All nourishment which the body receives passes through the mouth. If the mouth is clean and healthy the whole body is so much more likely to remain healthy.

With this thought in mind the Oral Hygiene Committee of the Dental Society of the State of New York has produced a little booklet of



HE USED HIS TOOTHBRUSH

There was a boy so very fair,
With rosy cheeks and bright red hair.
He used his toothbrush.

A score of lovely teeth like pearls
Aroused the envy of the girls.
He used his toothbrush.

He lost his baby teeth, 'tis true,
As months passed by, but he could chew.
He used his toothbrush.

When by and by he was a man,
So good and strong; his motto ran,—
“I use my toothbrush.”

Now boys get busy as can be,
Grow up strong men so good to see,
And use your toothbrush.

rhymes, of which two pages are reproduced here, showing an educational scheme liable to attract and interest our juvenile friends.

The prices are merely nominal, and orders can be promptly filled as follows, by addressing Secretary, 33 Chestnut St., Rochester, N. Y.

<i>No. of Copies</i>	<i>Price per Cop</i>
1 to 100	\$0.10
100 to 1000	.09½
1000 to 5000	.09
5000 and over	.08

Sample Copy Free

WATCH US!

We are now going through what Great Britain and France have stood for four years. Statistician figures that the war is costing the U. S. \$2,000,000 an hour.

Statistician might cut out that U. S. and say costing us.

He might also pack it away in his brain—either in the right or left lobe, wherever there's the most room—that we don't care a whoop in Halifax if it's costing us \$2,000,000 a second. We have started in on this thing and are going through with it.

That's all.

BALLASTED BREAD

Much of the bread manufactured in Austria now is 50 per cent. flour mixed with sand, according to the *Arbeiter Zeitung*.

EXTRACTIONS

To-day will be yesterday to-morrow—watch your step.

Every time a man bets with a woman he loses if he wins.

You are flattered by a three-year-old kid's affection until you see how much more he likes a stray pup.

"What is your idea of a good salesman?"
"A bald-headed barber who can sell hair tonic."

If you find hoofs and horns in the hash don't kick . . . some one is trying to make both ends meat.

"Rhubarb is versatile. It is both a food plant and a drug."

"It has nothing on cabbage. You can eat it or smoke it."

Mrs. Stingy—Dear, the baby has swallowed a penny. What on earth shall I do?

Mr. Stingy—Oh, well, let him have it. Next Thursday is his birthday, anyway.

Waiter (hinting for a tip)—And how did you find the steak, sir?

Diner—Oh, I just moved that little piece of potato and there it was.

When you see two white shoes drying on a window sill and a girl hanging out of the same window drying her hair, you can bet that she isn't going to eat any raw onions for supper.

Prosecuting Attorney—Your Honor, the sheriff's bull pup has gone and chewed up the court Bible.

Judge—Well, make the witness kiss the bull pup, then. We can't adjourn court just to hunt up a new Bible.

"Have you a piece of toast in your pocket?" asked the inmate of an insane asylum of a visiting physician. The doctor answered that he had not and asked why it was wanted. "You see," said the poor fellow. "I'm a soft boiled egg and I want to sit down."

"What are they moving the church for?"

"Well, stranger, I'm mayor of these diggins. I'm for law enforcement. We've got an ordinance what says no saloon shall be nearer than 500 feet from a church. I give 'em three days to move the church."

One notices at the beaches that a great many young women, in order that the soldiers may have plenty of uniforms, are denying themselves cloth in their bathing suits.

If the careless waiter spills soup all over you at the table, you need not feel too bad about it. The worst possible stain can be removed from either a silk or satin gown with—a small scissors.

"What blasts my slats," said the man with the purple socks, "is why the commercial nations of the world have been going to Africa for ivory through all the ages when they could have secured it in Russia with less trouble—and good, solid Bolshevik ivory at that!"

"I should like a porterhouse steak with mushrooms," said the stranger, "some delicately browned toast with plenty of butter—"

"'Scuse me, suh," interrupted the waiter. "Is you tryin' to give an order or is you jes' reminiscin' bout old times?"

Working his way through the street car, past the line of women hanging on straps, the conductor noticed a man who he supposed was feigning sleep to avoid paying fare.

"Wake up!" he said, as he jolted the slumberer.

"I wasn't asleep," replied the passenger, producing a coin.

"Then why do you sit with closed eyes?"

"Because of the crowded condition of the car. I hate to see women standing."

Oldest Inhabitant—My father lived to be a hundred and two, and sister Susie she kicked the bucket at a hundred and four!

Reporter—To what do you attribute your long life?

Oldest Inhabitant—I haven't decided yet. There's a dozen of them there patent medicine companies dickerin' with me, and I'm goin' to git the best barg'in I kin out of some one of them.

THE BEST OF CURRENT THOUGHT

[*The Dental Review*, August, 1918]

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EARLIEST REPORTS OF JAW INJURIES IN WAR

What are probably the earliest recorded cases of jaw injuries in war are those given by Homer in his epic relating the struggles between the Greeks and Trojans. The "Iliad" tells the story of many such injuries, inflicted by javelin or arrow; most of them were fatal. Perhaps the most graphic description of all is that given in the XVIIIth Book of the "Odyssey." It was caused by an upper cut and occurred at the banquet of the suitors. Ulysses has returned in disguise. The suitors, ignorant of their impending fate, mock him and put up Irus, a beggar, to fight. The description of what follows is from Pope's translation:—

"Then girding his strong loins, the king prepares
To close in combat, and his body bares;
Broad spread his shoulders, and his nervous thighs
By just degrees, like well-turned columns, rise:
Ample his chest, his arms are round and long,
And each strong joint Minerva knits more strong
(Attendant on her chief); the suitor-crowd
With wonder gaze, and gazing speak aloud:

"Now front to front each frowning champion stands,
And poises high in air his adverse hands.
The chief yet doubts, or to the shades below
To fell the giant at one vengeful blow,
Or save his life; and soon his life to save
The king resolves, for mercy sways the brave.
That instant Irus his huge arm extends,
Full on his shoulder the rude weight descends:
The sage Ulysses, fearful to disclose
The hero latent in the man of woes,
Checked half his might; yet, rising to the stroke,
His jaw-bone dashed, the crashing jaw-bone broke:
Down dropped he stupid from the stunning wound;
His feet extended, quivering, beat the ground;
His mouth and nostrils spout a purple flood;
His teeth, all shatter'd, rushed inmixed with blood."

In spite of the strength of the jaws of ancient man such injuries as these were evidently common, and the unhappy victims were left to their fate. In these days much can be done in spite of the hindrances and obstructions offered by the powers that be. Incidentally we wonder how many modern men are muscular enough to inflict such injury as is described, with a blow of the fist; probably very few, if any at all.—*British Dental Journal.*

THE FOLLY OF POSING

[This word of Dr. Johnson's against the boasters and braggarts is timely. If you have suffered at their hands, cheer up, everyone is on to them, and they don't fool even themselves.—EDITOR.]

There is a species of folly growing up in the profession which can do little good and much harm. It relates to a propensity on the part of some men to pose before their fellows regarding the amount of practice they do and the enormous fees they receive. It is in a way the direct heritage of the propaganda for practice-building that raged so extensively a few years ago, and with this as with the other it is quite likely to bring discredit on the profession. To get good substantial fees for service well rendered is perfectly legitimate and wholly commendable. It places the profession on a higher plane to have the impression go out that dental service is worth a good fee, and it creates an incentive to do the best work to have that work well rewarded. But to get abnormal fee for ordinary work is demoralizing to all concerned, and worse yet to pose as getting higher fees than other men just for the purpose of making an impression as to the superiority of the claimant is foolish and mischievous in the extreme. The chief harm is done not to men who have been for some time in practice because they know only too well the type of man who makes these boastful claims, but when a young practitioner who is struggling along in face of various kinds of handicaps and who has to content himself with moderate fees listens to one of these siren songs from the lips of a poser, he is quite inclined to shrink into his shell and put himself down as a failure. It is in every way disheartening to hear a practitioner say in the most nonchalant manner, as if it were an every-day occurrence: "I just got \$500.00 for a couple of crowns," when the listener must content himself with less than a tenth that sum for the same service. Nor does it conduce to peace of mind when a young man who is having an uphill road in practice is told by another: "My practice has never run less than a thousand dollars a month from the start."

There may be occasional cases where such extravagant statements as these will hold good, but they are very rare, and they do not constitute the general run of practice. In fact, most of the grandiloquent claims made by the professional poser are fabrications pure and simple, and they should not in any sense be taken by the young man who hears them as a gauge of the actual facts in the case. It would be interesting and wholly illuminating to see the income tax schedule made out by many of these men who pose as professional nabobs.

Let the young man who finds himself disturbed by all this silly talk comfort himself by the reflection that "things are seldom what they seem

—skim milk masquerades as cream” and that the men who talk so much about what they do are frequently the men whose rating by the commercial agencies would not bear close scrutiny. The fact is that most of the men who really get good fees are the ones who say least about it, and those who have acquired a competency have seldom been heard boasting of the magnitude of their practice. It is not only indecent to pose as some men are doing, but it is the sheerest folly.—*Dental Review*.

THE IMPOSSIBLE SOCIALIST

The Bolsheviki betrayed the Slavic race when they abandoned Serbia to any fate the two kaisers might impose. They betrayed Christianity when they consented to the butchery of helpless Christians by the Turk. They betrayed France, which loyally came to Russia’s assistance when the kaiser brought slaughter and fire to Russian lands. They betrayed Russia when they opened her frontier to the German invader. They betrayed the Poles, the Letts, and the Finns when they held it none of Russia’s business what Germany did to them. They betrayed internationalism when they left Belgium to rapine and plunder.

Back of these betrayals is a still deeper betrayal—a betrayal of the very socialistic cause for which the Bolsheviki pretend to stand. Untrue to everything else, they also have been untrue to the doctrines they have loudly shouted. They failed to seize an opportunity to establish a socialistic order that the world would surely imitate if it had proved good on test. Instead they have made socialism a stench. It is the Socialist, rather than the anti-Socialist, who has been injured by the Bolsheviki. Instead of furnishing an example for imitation, they have set up one to be avoided. “See what your theories did to Russia”—for many years the Socialist agitator will be silenced by this remark.



THE RESTORATION OF MISSING OR LOST TEETH*

By A. J. BUSH, D.D.S.

A successful prosthodontist is one who has a clear vision of the human denture in its completeness and functional perfection, and who in a practical sense has recognized and accepted the normal denture for his guiding principle in prosthetic procedures.

No phase of dental science bears a more direct relation to or shows a greater need for a comprehensive knowledge of the structures and functions of the jaw, alveolar process, periodontal membrane, teeth and dental arches and also the muscles of the lips, cheeks, tongue and mouth, the palate, nasal passages and throat, which assist the teeth in performing their function than the practice of dental prosthesis, orthodontia not excepted.

While it is not my intention to enter upon a discussion of the structures and functions of the many parts which compose the dental apparatus, I feel, however, that a knowledge of the growth and development of the dental arches from the beginning of the formation of the first dental follicle to the eruption of the last third molar, and a clear understanding of the workings of the forces which govern the position and occlusion of the teeth, and the factors which nature exercises in maintaining either harmony or inharmony in their arrangement and co-relations is indispensable to the prosthodontist who attempts to restore lost functions of the dental arches by means of artificial substitutes.

A full complement of teeth in normal occlusion is fundamental to our conception of the highest degree of functional efficiency of the human dental apparatus. Unfortunately, however, according to Dr. Angle, malocclusion of the teeth in some form is almost the rule rather than the exception and is undoubtedly becoming more common as civilization progresses. In considering the causes operative in producing malocclusion of the teeth, all authorities are agreed that loss of permanent teeth is one of the most potent.

Dr. Dewey has the following to say regarding loss of the permanent teeth: "Early loss of the permanent teeth produces a large percentage of malocclusions found in adults, and malocclusions will result from the loss of any permanent teeth at an advanced age."

Not only then is the loss of permanent teeth constantly associated with malocclusions which as a class constitute a large percentage of the cases in which we employ partial dentures and bridges, but also there is

*Read before the First District Dental Society, S. N. Y., March 4th, 1918.

another large per cent of malocclusion cases that have been mutilated by the loss of permanent teeth, but which were primarily caused by other etiological factors. The consideration of this problem of malocclusion, therefore, injects itself into every operation performed in dental prosthesis.

Since malocclusion is caused by the perversion of the forces which govern the positions of the teeth and since all malocclusions are progressive so long as the forces which caused the malocclusions remain perverted, it is very evident that artificial teeth employed as substitutes for teeth missing from dental arches must be and are amenable to the same forces, and that these artificial substitutes, including the teeth which support them and the teeth in the opposite arch which occlude and articulate with them, must be left free to follow their natural tendencies individually and collectively in accordance with the forces which control their positions and which keep them in harmony with the general arrangement of all of the teeth of both arches which characterizes the type of malocclusion present.

We have been taught and we have been teaching that the artificial substitutes for missing teeth should carry occlusal and incisal surfaces after Nature's plan, placed in normal occlusion and articulation, when we know perfectly well that malocclusion is the rule rather than the exception.

Mutilated malocclusion cases that have been restored by partial dentures or bridgework in which the artificial cusps have been placed in full interlocking occlusal contact with the teeth of the opposite arch without regard for the occlusal relations which should characterize the type of malocclusion which involves both arches, will undoubtedly result in producing a complication more serious than the mutilation caused by the loss of the teeth replaced; and furthermore, the abutments or teeth which give support to such replacements will be subjected to and their loss hastened by a continuous traumatism of conflicting forces.

Failures from this cause, especially in connection with fixed bridge-work and also in connection with some of the less movable types of removable work, are more numerous than commonly believed.

The normal should not be used as a pattern in restoring a break in the continuity of an abnormal arch any more than the abnormal can be used as a pattern in restoring similar breaks in the continuity of a normal arch. In other words the normal is just as incompatible with the abnormal as the abnormal is with the normal.

This, however, is meant to apply to the restoration of missing teeth only in so far as the formation of their occlusal and incisal surfaces are concerned and more especially to their position in the same arch and their relations with the teeth in the opposite arch.

The size, from the interdigitating surfaces of the teeth restored, there-

fore, should not only duplicate those which were lost, but also their position and arrangement, in so far as possible, should be the same as that which characterized the former positions of the missing teeth, according to and in harmony with the normality or abnormality which characterizes the general arrangement of the teeth before they were lost.

It is well to recognize, however, that the success which will attend our efforts in artificially replacing teeth missing from dental arches in malocclusion or rather the success of restoring lost functions of the dental arches resulting from lost teeth, is subject to and cannot exceed the limitations imposed by the character of the malocclusions involved. It is also well to recognize that the fullest degree of success in restoring lost functions can only be achieved after the remaining teeth have been placed in normal occlusion; for then and only then is it possible to replace the missing teeth by bridgework or partial dentures in harmony with the line of occlusion and with the forces which govern the normal position of the teeth and to restore the dental arches in accordance with our conception of the highest degree of functional efficiency.

Thus far I have discussed the principles of occlusion as applied to bridgework and partial dentures only and have endeavored to show that the functional value of these forms of artificial substitutes is determined by the character of their occlusal relations with and according to the occlusal relations of the natural teeth remaining in the dental arches.

The application of the principles of occlusion to the restoration of edentulous jaws will be discussed from the standpoint, that, if the articulating surfaces in the condyles and fossae, the muscular action and the habitual masticating movements of the jaws are determined by the articulation of the adult natural teeth, then so also must be the artificial teeth articulated in order to enable the patient to continue habitual masticating movements which were established prior to the loss of the natural teeth.

It may be difficult to diagnose malocclusion as having previously existed in an edentulous mouth but generally by closely studying the mouth in its relation to the other features and by observing the relation of the mandible to the maxilla, a definite opinion can be formed regarding the occlusion of the previous dentition.

Dr. Angle states that "Notwithstanding that the effect on the facial lines of the varying forms of malocclusion found in the three different classes varies not only with the degree of malocclusion, but somewhat with the individual type of face, yet the facial deformity produced by the malocclusion in each class is so distinctive and constant that after some practice the orthodontist may even classify with considerable accuracy the malocclusion of the people he meets without an actual examination of their teeth.

"So, also, the loss of teeth produces such distinctive disturbances of the facial lines as to make diagnosis from them alone often easy. One interested soon finds himself making mental diagnosis of malocclusion and classifying facial deformities whenever and wherever he sees new faces."

If the facial deformities produced by the malocclusions in each class are so distinctive and constant, that after some practice the orthodontist may classify with considerable accuracy the malocclusions of the people he meets without an examination of their teeth, and if these facial deformities which are so distinctive and constant will but retain their status quo after edentation, then by the same acumen the prosthodontist should be able, after some practice, to make the same diagnosis.

Whether we agree or do not agree that the habitual masticating movements of the jaw are determined by the articulation of the adult natural teeth and whether the patient shall be enabled to continue these movements which are probably the most efficient he will ever have, or whether these movements shall be destroyed by constructing dentures in normal occlusion; aside from all this, aside from these considerations which more especially concern the probable masticatory efficiency of artificial dentures, we must remember according to Dr. Angle—"That the dental apparatus is not an organ with but a single function, like the eye or the ear, but that it is a very complex structure, with many functions into which enter not only the jaw, dental arches and teeth, but the muscles of mastication, the lips, tongue, nasal passage, palate and throat, and that in addition to the function of mastication they are also concerned in the vital function of respiration and also in speaking, singing, whistling, laughing, crying—in short in the expression of all the various emotions."

If the different parts and combination of parts entering into the performance of these various functions and acts are so intimately associated that even slight inharmony in the growth and development of any one may ultimately involve the whole apparatus, interfering with the normal function of all, then must we not be concerned in providing artificial dentures that not only will be in accord with the performance of their various functions which have become modified, especially the function of mastication, and also all functions or emotions that involve the tongue and lips?

We can find additional reason for articulating artificial teeth after the general plan of the occlusion which was the rule previous to the loss of the natural teeth in the study of facial art.

Perfection or deformity of the human face largely depends upon the occlusal relations of the teeth.

Facial deformities produced by the malocclusion in each class are characteristic of and vary with the degree of malocclusion.

If taken in time the orthodontist may correct the malocclusion and Nature will renew her efforts toward the development and growth of all the related parts, and in time establish full harmony of these parts, according to Nature's plan. But on the other hand, if malocclusions are permitted to progress until late in life, and the teeth ultimately lost after the deformity of the face and jaws is permanently established, then they are beyond the skill of the orthodontist and it is not within the province of the dental prosthodontist to reclaim opportunities lost to the orthodontist.

It would be interesting to know what per cent. of people reach adult life with a full complement of teeth in normal occlusion and subsequently become edentulous, but since normality of tissues in general predisposes to their health and longevity and since malocclusion is the rule rather than the exception, it would seem safe to assume that the greatest percentage of edentulous jaws is yielded by those cases which were in the beginning or during their development period, associated with maldevelopment in some form.

Though a full discussion of the "Restoration of Lost or Missing Teeth" necessarily involves the consideration of methods as well as principles, nevertheless I have acted upon the assumption that my treatment of the subject assigned by your chairman would be in better harmony with the intention of and the general treatment accorded to the other subjects of your symposium, if my remarks were confined to a consideration of some of the principles of occlusion which govern prosthetic procedure and methods which are employed to restore dental apparatus to the fullest degree of functional usefulness.—*Journal of the Allied Dental Societies.*



THE ROMANCE OF PLATINUM

The series of articles now running in the DENTAL DIGEST on the "Conservation of Platinum in Dentistry" are very interesting reading for dentists as we have been informed many times since they began, as they relate almost entirely to the finding of a substitute for this most remarkable of all metals. However, it is worth while to read something of the metal itself, now that it is so much in the public mind. The following account was recently obtained by the N. Y. *World* from Chas. H. Herty, editor of the *Journal of Engineering Chemistry*:

To the average layman and laywoman the word platinum brings no association to the mind other than that of jewelry. That to a considerable extent the outcome of the war depends upon our supply of the metal occurs to very few. Yet such is the case, and, recognizing this, Congress has just enacted a measure, limiting the sale, possession, and use of platinum under license from the Director of the Bureau of Mines.

What the country needs, is to be awakened to the fact that without platinum we can wage no war, and that to use platinum at this time for the purpose of human adornment is well-nigh criminal.

Only recently the Appropriation Committee voted \$5,000,000,000 to be used for artillery for Pershing's army. That artillery isn't worth a red cent if it is not furnished with propelling force and high explosive force inside its shells to make the Kaiser aware of our presence. To get that force platinum is absolutely necessary, not as platinum, but as a catalyst in the manufacture of sulphuric and nitric acid. It is also essential in airplane manufacture. A catalyst is a chemical body needed in the formation of certain chemical compounds. Platinum is the catalyst in the manufacture of sulphuric and nitric acid. A quantity of the metal can be used indefinitely for the same process. It loses nothing in the formation of the gases and always maintains the same bulk and form.

It is true that there is another way of making sulphuric acid, the lead chamber process, which has been largely used in the manufacture of acids for fertilizer. But there are several things that work greatly against this plan. First, our supply of lead is not sufficient to warrant using it for making munitions on any large scale; second, it takes almost a year to put up a lead chamber sulphuric acid plant, whereas a platinum contact process plant can be put up in about six weeks. It took the du Pont people exactly that length of time to build such a plant recently. And, third, the product furnished by the platinum process is the strongest and best.

The importance of nitric acid is equally great. In the past we used to

manufacture that product solely by treating Chile saltpeter with sulphuric acid. To-day there are good reasons why this method is not the most efficient. First of all, we must again resort to our supply of sulphuric acid, and, secondly, we have not the ships to spare to bring the saltpeter from Chile, nor do we know how long we can count upon Chile to supply us. Now the Government is beginning the manufacture of nitric acid by the platinum gauze process. Several large plants are being erected in Ohio and in Alabama, for the purpose of fixation of atmospheric nitrogen. To make nitric acid you mix ammonia gas with air and allow the mixture to pass over a fine platinum gauze. The chemists of the Bureau of Mines have tried various substitutes for platinum, but the results are not comparable to the acid made by the platinum gauze process.

We have at the present time enough platinum to supply, let us say, 2,000,000 men. We can keep on making munitions for that number. As I stated before, the metal is not consumed when used as a catalyst. "Why, worry then?" you may ask. For this reason: We must not limit either the number of men fighting or the amount of munitions for them. At the present time we can supply a certain amount, but not a bit over that amount.

The sources of supply for platinum are Russia and Colombia. In the past the United States used to get 90 per cent. of its supply from Russia—which, by the way, controls 95 per cent. of the world's supply of that metal—and less than 10 per cent. from Colombia. Our domestic supply is well-nigh negligible, meeting less than 1 per cent. of our needs, and experts hold out no hope of any increase in the domestic production. Even before we entered the war Russia had prohibited the exportation of platinum to any country in the world, including ourselves. To-day there is no question of our getting any from that country unless there is a material change in conditions there; but, on the other hand, there is every reason for believing that Germany is getting all that she needs; her control of the Ural mining region warrants that belief. In the past we had been getting well-nigh all of Colombia's supply of platinum, but the republic of Colombia is not particularly friendly to the United States. Word has come that the Government of that country has taken over the platinum industry, which means that the supply may be open to bids. There is every reason in the world to believe that Germany will not let that chance slip, and that she may, by insidious methods, manage to overbid us.

What that would mean is almost too horrible for contemplation. We should simply have our hands tied down to the amount we now have on hand for Government use and no more, unless drastic measures should be taken by the Government to increase its supply by commandeering the enormous amounts of platinum now being used for non-essentials.

First and foremost in this category comes the jewelry industry. Nearly 50 per cent. of the available stock of platinum has been reported to be in the hands of jewelers or on the persons of women who have their jewels set in it. On March 1 the Government took the first step toward commandeering platinum. This affected importers and refiners. On May 15 the press throughout the country carried the announcement that platinum had again been commandeered. Why this duplication of commandeering orders? The answer is simple. In the preparation of the original order some one blundered in two ways, in failing to include iridium within the scope of the order—iridium is a metal used to harden platinum—and in assuming that manufacturing jewelers would comply with the spirit and intent of the order, which some did not. When the manufacturing jewelers were asked to offer to the Government at cost a considerable part of their supply of unworked platinum, an inventory of which had been taken, only 10 per cent. of the amount on hand was offered. Those charged with building a dam across the platinum stream to store up its waters extended the dam two-thirds of the needed length, (covering importers and refiners), whereupon, through the remaining open space (the manufacturing jewelers) platinum flowed into the already green fields of non-essential adornment, while the builders of the dam rested contentedly from their labors, oblivious of the possibility of a drought. The second commandeering order from the War Industries Board was an improvement over the original in that it included the manufacturing jewelers, and the metals iridium and palladium, but, strange to say, in the same breath it released to the jewelers 25 per cent. of the metals thus commandeered, further releases to be made to jewelers upon proper application. The arguments of the jewelers in gaining their point were that theirs was a great industry which should not be suddenly shut off from its supplies.

Platinum to-day costs \$105 an ounce. The representative of the War Industries Board in charge of platinum says that it will cost the Government from \$500 to \$600 an ounce should the time come when the platinum in jewelry will have to be commandeered. In order to let the jewelry industry go on using platinum indefinitely the taxpayers of the nation will have to pay the difference between the price as it is to-day in the raw material and the price as it must necessarily be when the platinum has been artistically worked over.

The jewelry industry is not the only one which is using this metal. The dental profession alone uses 27,000 ounces of platinum a year. Dentists, however, are anxious to have their supplies commandeered. Alloys equaling in every way pure platinum and containing only 10 per cent. of this metal have been prepared and thoroughly tested. No steps have been taken by the Government as yet to commandeer this source of supply.

Another leakage in the platinum supply is caused by telephones. According to reports, the telephone manufacturers used 30,000 ounces of platinum annually. To-day this has been cut down considerably, the metal being used only where it has been impossible to find substitutes for it.

The Government must not only commandeer a sufficient supply of platinum for munition works alone, but for those parts of war machinery where platinum is the only metal that will insure perfect control. Some of these are ignition points for gas engines used in airplanes, motor boats, ambulances, and the like, also for X-ray tubes for the Medical Corps.

It is primarily the women of the nation who must be aroused to the patriotic duty of giving up platinum jewelry during the period of the war. Already one group of patriotic women has organized a Women's National League for the Conservation of Platinum.

In 1915 we had approximately 44,000 ounces of platinum, in contact acid plants; in 1917 we had about 60,000 ounces. In order to supply the sulphuric and nitric acids to make a sufficient amount of munitions to meet the increasing war needs, the amount of platinum for this purpose must be very largely increased.

I am confident that when the women of the country understand the essential rôle that platinum plays in the manufacture of munitions for our army, their attitude toward platinum jewelry will be so changed as to make the solicitude of the War Industries Board for the welfare of the jewelry industry look petty in the extreme as compared with their own solicitude for the blood of their sons.

